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## THE ATTITUDE OF THE PUBLIC TOWARDS THE MEDICAL PROFESSION.*

By SOUTHGATE LEIGH, M. D., F. A. C. S., Norfolk, Va.

It is my desire to present for your consideration a few simple thoughts bearing on this very important and vital subject. With your kind permission I shall speak plainly and to the point.

There are many things that the public does not understand and does not realize in its dealings with the regular medical profession. Some of these misunderstandings are no doubt the fault of the doctors themselves, while many are due to a lack of information as to the true status of the medical profession.

The people of Virginia are the best people on earth, and I know them well enough to feel that they would be glad to have all such doubts promptly cleared away. I do not hesitate, therefore, to lay the matter plainly before you, believing that you will understand that my motives are of the best, and that I am simply trying to do my little for the public good.

But few people fully realize the hardships of a doctor's life. He is at the "beck and call" of everybody, high and low, rich and poor. He is expected to be always on call, day and night, and must respond regardless of time or weather. His time is never his own, and does not belong even to his family. It is impossible for him to make positive engagements, because so often they are necessarily broken as duty calls. He cannot properly look after his own physical welfare because of his irregular hours and the uncertain demands upon him, and only too frequently his family is neglected. This picture is not overdrawn but, on the contrary, the reverse is true.

You might very properly ask, then, why does a man go into medicine, or why does he continue? Why is he willing thus literally to give his life for the people?

The answer is simple. It is because of his intense love for the work. Because of the wonderful satisfaction that comes to him from being able to relieve human suffering and prolong human life. And that is practically the only reward, in this world at least, that is his.

You would think that one who thus literally gives his life to the public should at least be appreciated and should certainly be rewarded in worldly goods. The fact is, however, that it is a very rare thing for a doctor to accumulate anything from his professional work, and a very large proportion of doctors really do not receive enough to furnish a comfortable living for themselves and their families.

I have in mind a country doctor who labored faithfully and earnestly among his people for a quarter of a century, never sparing himself, going day and night without proper rest or proper care of himself. I was especially struck by the fact that he could not be persuaded to leave his practice even for a day, for fear that one of his patients might suffer at his absence. When this faithful servant of the people passed to the Great Beyond, he left nothing for his family except a partly mortgaged frame dwelling, his home.

To my mind, that was a tragedy; a tragedy due to a lack of realization on the part of his clientele. And such sad occurrences are taking place all over this State. I cannot believe that our good people would allow such a situation to go on if they did but realize the true facts. *A doctor should be the first, and not the last, to be paid.*

Regardless of his own personal affairs, a doctor cannot refuse a call to an ill patient, pay or no pay. He has to rely on the honesty and fairness of the people to recompense him. But the facts are that the recompense is usually not forthcoming. Our good people are greatly in need of education along these lines.

*Read by request before the Southwestern Virginia Medical Society at a public meeting, at Marion, Va., March, 29, 1928.

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One of the main reasons for the scarcity of doctors in the rural districts is that they cannot collect a decent living. The result is that in many places the people are suffering for medical attention. The older doctors are gradually passing away and the younger ones are fearful of the rural sections.

In some States, a new and most successful plan has been adopted in certain country districts, badly in need of doctors. The substantial people of each such section get together and guarantee the doctor a certain amount annually. From reports coming to the American Medical Association, in no instance have the guarantors been obliged to make up a deficit. They have evidently persuaded the people to promptly settle the doctors' bills.

The educational part of a doctor's life is not properly understood by the public. The cost of a medical education is unreasonably high and the time consumed so great that the average age of the doctor beginning practice in this country is between 26 and 28. Even after he is in practice, a conscientious doctor must, in order to do his duty to his patients, be continually adding to his knowledge by reading, by attending medical meetings, and by visiting the important clinics. Instead of the public opposing such work and such enforced trips, they should urge them on their doctors, and co-operate with them fully. Such absences are for the direct benefit of their patients, the public.

The passing of the *old family physician* is pathetic, and brings sadness to the hearts of the older people of the communities. He was the friend and advisor in all things. He wielded a great influence over the people, being their father confessor, and comforter. He felt that the people belonged to him, were like members of his own family, and treated them as such. They loved him, looked up to him, and honored him. With all of this, however, it seems strange that the people thought so little of his necessities, and gave him so little of the things needed for himself and family. He could not force them, he was too close to them and loved them too dearly. The thing which he did best and which was of greatest importance has passed on with him. He studied his patients from birth to maturity and often to old age, their constitutions, habits, peculiarities, and was in a position to give them the best medical attention known in his time.

The *new family physician* can do even better if the people will but cultivate him, and get close to him, as they did to the old one.

This is an age of progress and development in everything.

In medicine, knowledge has increased by leaps and bounds. The science has grown so rapidly and extensively that no one man can handle thoroughly more than a small part. That means specialists in various lines.

With improved knowledge, with modern arrangements and appliances, much more can be done, than formerly, in exact diagnosis, in finding out what is the matter with patients before instituting treatment. Much has been done also in locating the causes of diseased conditions, so that such causes may be removed. The educating of the public in regard to the prevention of disease has greatly cut down the general mortality. The sum total of the efforts of the regular medical profession in these various lines has greatly reduced the amount and severity of sickness and materially prolonged human life.

I feel I am safe in saying that, in the past thirty years, the average life has been extended at least fifteen years. At that rate, the profession is, each year, through its various endeavors, adding to the span of life by six months. *Is not that a wonderful thing?* And the good work still goes on! The public does not fully understand it, or there would be better co-operation with the regular profession.

But to return to the subject of the "new family physician." Each family should have one, and he should be made to understand that he is in full charge of the physical welfare of both old and young. That will give him the splendid opportunity of keeping a *physical life record of each.* Such a record is invaluable, and can be made quickly available by a card index system.

When a member of the family needs a specialist in any line, the *family doctor* is the one to arrange the visit, keep in close touch with the consultant, supplying him with the previous history of the case, and add to the health record the details of the specialist's work.

It is a great mistake for the patient to go to another doctor without the advice and co-

operation of the home physician, upsetting his interest in the case, and completely demoralizing his records.

The strange doctor to whom the patient goes is also placed at a disadvantage, not being familiar with the "health record" and with the previous treatment.

In the matter of consultations, too, the public needs enlightenment. A doctor should not be employed unless the patient has confidence in him and is willing to trust his life and safety to his care. In the event of serious illness, the attending doctor should be made to understand that the responsibility rests solely upon him and, if he needs help, he is the one to call for it and select the consultant. Such a consultation is productive of the most good, while a consultation arranged in any other way is often harmful.

The public does not understand how keenly the conscientious doctor feels the responsibility of a human life being in his hands, and how anxious he is that everything known to science should be available for the patient.

The thoughtless habit that so many have, of going to a neighboring town or city for minor ailments, is also bad and greatly interferes with the systematic work of the family doctor. He should rather be co-operated with to such an extent that he will have a well-equipped office, with the necessary assistance and facilities, and that he may keep regular office hours.

There is no greater need today than for the family physician, especially in the country districts, to be permitted to do satisfactory office work. He has the necessary knowledge, can get the proper assistance and facilities, and is lacking only in the one essential, and that is the co-operation of his patients. A large proportion of ailments can be better handled at the office, and through such office calls the doctor can be saved many hours of unnecessary driving and effort. Through office work, patients may be more thoroughly examined, and many aids in treatment employed that are not available at the homes.

People will become accustomed to the life-prolonging practice of "periodical health examinations", and much serious disease will be discovered in its early and curable stage.

Among the baffling problems which are confronting the profession today is the problem of cancer in women. The public has not yet learned that cancer is nearly always a preventable and curable disease. It is, however, a fact. The difficulty with women is that they will not permit themselves to be properly examined. Modesty and ignorance of the facts hold them back. They do not understand that certain discharges, which a very large proportion of them have, are *abnormal* and *dangerous*, and often are from simple curable conditions which, if not detected and promptly treated, will develop into cancer. They should at once consult their family physician about these and any other signs or symptoms which they do not understand.

With a properly equipped office and a woman assistant, the family doctor, in a decent and refined way, may make the necessary examinations and save many a valuable life from the horrors of cancer. The doctors are ready. All that is needed is the active sympathy and co-operation of the public.

And now we come to the "quack", that "vulture of evil", preying on the superstitions of the helpless and ignorant. If the people knew what the profession knows, no quack would be tolerated in the State of Virginia. In its legislative work against irregulars, the medical profession is acting for the helpless, and those who have not had the opportunity of learning the facts. The profession is simply insisting that every individual permitted to practice on sick people should be properly educated, should have the fundamental knowledge of the essentials of medicine. That is all. Such a demand is only right and proper. The State law requires that a regular doctor of medicine should have at least four years in a high class medical school and pass a rigid examination before a State Board. It naturally follows that *every* person licensed to practice on sick people should also be properly educated.

No one can intelligently care for the sick without sufficient knowledge to enable him to first find out from what the patient is suffering. Without such investigation, treatment is of little avail. Treating a symptom does not cure a disease, and often prevents or hinders a cure. After a diagnosis is made, treatment can properly be instituted and often the cause of the trouble removed.

The Legislature has most wisely made the laws more stringent for the protection of the public. It has especially decreed that harmful advertising should be prohibited. The

public has, through Government agencies and the publications of the A. M. A., learned much in regard to the uselessness and dangers of patent medicines; and yet there is much more to be learned. The same rule applies to such medicines as to treatment without diagnosis. In a large proportion of cases these drugs actually do harm and at times cause danger.

The family physician always instructs his regular patients in regard to the simple remedies which they can safely use. If anything else is needed, it is always best to get his advice.

The Woman's Auxiliary to the American Medical Association, to the State Medical Societies, and to the local medical societies, is doing much in aiding the profession in telling the "true story" of medicine to the people. They are helping to educate the public in regard to preventive medicine in schools, clubs, families and communities; in urging regular health examinations of both men and women *by their family physicians;* in aiding the doctors to improve themselves; to attend regularly local and distant medical meetings; in bringing about a better feeling in the medical profession itself; and in educating the public as to what regular medicine is, contrasted with quackery.

If you have no Woman's Auxiliary in each of your counties, I would say to you, both doctors and people, that you are missing a great aid to your medical work and health development. Other sections of this and other States have such active and productive auxiliaries.

The women have augmented their work greatly through a systematic distribution of the great health magazine, "*Hygeia*", which tells the public in simple, understandable language, what medicine is, and gives much helpful advice to the laity. This magazine should be in every doctor's office, in every library and school, and in the homes of all thoughtful people.

Virginia is much behind its sister States in medical organization. As I attend each year the wonderful meetings of the American Medical Association, to which I have been a delegate from the Medical Society of Virginia for the last ten years, I am continually impressed with the great good that thorough organization of the doctors of the States is doing for both the profession and the public.

In Virginia we have a number of strong local societies, taking proper care of all medical activities, co-operating closely with the State Board of Health, and looking after the indigent and helpless. To make their work really effective, there should be an organization in each of the hundred counties of the State, even if only a "skeleton organization". For instance, this splendid society, which is doing so much good in an educational way, covers nine counties. From time to time, exceedingly important and vital matters come up which require prompt help from each county. A skeleton organization, with president and secretary for each county, to meet only when called upon, would be of great help in public health and in legislative matters. I would urge that you give serious consideration to this important subject.

And now, my friends, I must close. I hope you will take to heart these few simple thoughts, and that they may be the means of bringing about a better understanding between the public and the profession, so that they may work together harmoniously for the great cause of suffering humanity and the mutual benefit of all.

109 *College Place.*

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## SOME STOMACHS I HAVE MET.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.
(From the Surgical Department of St. Elizabeth's Hospital, Richmond, Va.)

The chief problem in stomach trouble is the diagnosis, and a second like unto this is the type of treatment after the diagnosis has been made. It is well to recall some of the physiologic facts about the stomach, because the diagnosis must be made on a perversion of normal function, and frequently the stomach expresses by nausea, vomiting, heartburn or water-brash the affections of other and possibly distant organs. A large majority of all gastric symptoms, probably 80 per cent, are due to interference with the motor mechanism of the stomach, and this may come from a local lesion or reflexly from a distal lesion or from constitutional disease.

The stomach empties by waves of peristalsis that begin about the middle of the body of the stomach and proceed toward the pylorus in cycles. According to Cole, the most frequent cycle is what he calls the 4-cycle, in which there are four waves succeeding each other. There is in each wave a definite sys-

*Read before the Richmond Academy of Medicine, Richmond, Va., March 13, 1928.

tole and diastole. The systole takes up about seven-tenths of the cycle, and the diastole three-tenths, and the cycle occupies about 8 to 12 seconds. While this is going on the whole cardiac portion is tonically contracted as a hopper forcing food into the right half of the stomach. Though the peristaltic waves are not observable by the fluoroscope until they reach about the middle of the body of the stomach, Alvarez, Klein and others show that they really begin as ripples from the lesser curvature and the impulse initiated here proceeds down to the body of the stomach where the contraction increases. The lesser curvature of the stomach, then, contains important neuromuscular structures somewhat like the sino-auricular nodes of the heart and the bundle of His. Klein thinks there is a secondary center at the incisura. The contraction of the pyloric sphincter is apparently timed synchronously with the peristalsis of the stomach and the duodenum, so that when the full wave reaches the pylorus it relaxes slightly and a small spurt of gastric contents is emitted. The acid-alkali theory of opening the pylorus that was mentioned by Pavlov and by Cannon does not seem to explain satisfactorily the mechanism of the opening of the pylorus, because any irritation in the duodenum may cause reflexly its closure.

The secretory phenomena of the stomach frequently have much to do with the motor mechanism. Gastric juices and peristalsis are stimulated by food, and some foods stimulate the stomach more than others. For instance, meat proteins produce marked stimulation both of the gastric juice and of the peristalsis. If there is a spasm at the pyloric end of the stomach induced by an ulcer, or, reflexly, by a lesion elsewhere in the peritoneal cavity as has been well shown by Walter Hughson, this tends to dam back the food, and prolonged contact of food with the gastric mucosa increases the gastric juice; it may cause vomiting or at least produce regurgitation, or water-brash as it is called, and cause the gastric contents to regurgitate into the esophagus and frequently into the mouth. This regurgitated fluid is quickly swallowed, though it leaves a bitter taste. The lack of harmony in peristalsis may be caused by spasm induced by an irritation or ulcer, especially in the pyloric region and along the lesser curvature, or by a reflex spasm from a lesion elsewhere, or by some constitutional trouble, as acute infectious diseases, in which the toxemia seems to depress profoundly the more sensitive muscles of the gastro-intestinal tract which normally contract quickly and so alter the rhythm of peristalsis or even reverse it.

Alvarez has shown that the muscles along the lesser curvature near the esophagus contract at a greater rate than along the pyloric end of the stomach, and that the muscle in the upper jejunum contracts about 20 times per second, whereas in the lower ileum contractions are only about 10 or 11 per second. If, then, the more rapidly contracting muscle is affected by toxic products in acute infectious diseases, it is readily seen that the harmony of emptying is affected and the muscle so depressed may produce reverse peristalsis, nausea and vomiting.

Lesions not in a sensitive area of the stomach cause practically no symptoms unless there is perforation, bleeding or obstruction. An ulcer along the greater curvature, while unusual, may cause no symptoms unless some of these complications arise.

A diagnosis of gastric lesions cannot always be made by the clinical history or by physical signs, though a fairly accurate diagnosis can in a majority of cases be reached by a careful history and a physical examination of the abdomen. As the stomach responds so readily to affections elsewhere in the body, unless the symptoms point very emphatically to a definite gastric lesion, it will be best to treat the case tentatively, particularly regulating the diet. A history of hunger pains coming on regularly after meals, relieved by food, soda or vomiting, recurring chiefly in the spring or in the fall, and particularly in a young man, gives a probable diagnosis of gastric or duodenal ulcer.

Dr. W. H. Higgins, attending physician to St. Elizabeth's Hospital, in an excellent study of the clinical significance of hunger pains, with an analysis of a group of cases from St. Elizabeth's Hospital, has shown that, of 162 gall-bladder and gastro-intestinal infections with hunger pains, this symptom was present in 50 per cent of the peptic ulcers, 15.4 per cent of cases of chronic cholecystitis, and 17.5 per cent of appendicitis cases. (Higgins, Wm. H., Clinical Significance of Hunger Pains. *Jour. Am. Med. Asso.*, Feb. 23, 1924, vo., 82, pp. 599-601). Hunger pains, as Cannon and Carlson have demonstrated, may occur from

normal gastric contractions in fasting in the absence of any lesion. They are not pathognomonic of peptic ulcer, but, as Higgins has shown, occur also in chronic cholecystitis and chronic appendicitis and are probably the result of reflex contractions either from a lesion in the stomach or duodenum or from the absorption of bacterial toxins through the branches of the vagi. Higgins found that adhesions from extragastric lesions are doubtless factors, but are not essential in the production of hunger pains when there is no peptic ulcer.

Hemorrhage from the stomach is suggestive of ulcer, though it may be from other causes, such as hepatic or splenic disease or possibly some toxic erosion of the mucosa which has not become an ulcer. Vomiting of blood, too, occurs occasionally from hemorrhages in the pharynx about the tonsillar region, or from the esophagus when the blood may be unconsciously swallowed. Roentgenologic examination by a competent radiologist is the best means of diagnosis of gastric lesions, and should always be utilized before a definite diagnosis of peptic ulcer is made and particularly if there is a suspicion of cancer.

One of the most important problems in regard to gastric lesions is the diagnosis of cancer of the stomach. Statistics show that yearly in the United States there are about 100,000 deaths from cancer, and of these fully one-third are due to cancer of the stomach. Unfortunately, the symptoms of cancer of the stomach are not typical. When we begin to realize the fact that cancer of the stomach may be accompanied or preceded by any number or variety of gastric symptoms, or by no gastric symptoms at all, we will be more alert for this lesion. There is no known cure for cancer of the stomach except by operation, and in the early stages operation should give excellent results. According to Scott (Scott, W. J. Merle, The Relationship of Carcinoma and Callous Gastric Ulcer, *Surg., Gyn. & Obst.*, Feb., 1928, vol. xlvi, pp. 199-211), while the prognosis from cancer of the stomach was considered hopeless twenty years ago, there are now numbers of fifteen to twenty year cures, and in the early stages, according to several authorities, resection should give from 22 to 31 per cent of five-year cures. As in other regions, the hope of curing cancer of the stomach lies in early diagnosis and radical operation.

Scott sums up evidence as to the relationship between peptic ulcer and gastric cancer. He goes over all the evidence carefully and shows that even if the stringent restrictions that are claimed by those who oppose the frequency of the causation of cancer by peptic ulcer are followed, there are still cases in which such etiology does exist. In other words, if all cases are thrown out except those in which cancer is only found in the margin of the ulcer and not in the base, there still remain some in which these indications are filled. He quotes a case of his own in which symptoms of gastric ulcer had existed for twelve years and at operation an ulcer was found which showed carcinomatous changes in only one portion of the periphery. On the contrary, many ulcers which cannot be distinguished grossly from peptic ulcers are shown on histologic examination to be definitely cancer and to have cancer at the base. Ulcers of this kind often give a history of many years' standing. He reports two cases, in one of which the symptoms of ulcer were of five years' standing and in the other of thirty years'. On microscopic examination there was cancer at the base as well as on the side. Whether these were slow cancerous growths which finally broke down, or whether they were originally peptic ulcers which turned into cancer, is a matter of not much clinical consequence. The history of peptic ulcer had existed over many years. On operation, an ulcer was found which proved to be cancerous.

All three of these cases are from the records of Peter Bent Brigham and have been carefully studied. According to Scott, a just estimate of cases that appear to be chronic gastric peptic ulcer but which are cancerous either from the beginning or have originally been atypical peptic ulcers that have become cancer, is from 10 to 20 per cent of all the chronic gastric ulcers. Accepting this statement, which is much lower than the opinion of MacCarty of the Mayo Clinic, it means that one patient out of every five or ten with symptoms and roentgenologic evidence of chronic gastric peptic ulcer has definite gastric cancer and will in all human probability die from gastric cancer if operation is not performed to excise it. This estimate, of course, does not include the acute ulcers which heal rapidly and in which the symptoms have existed for only a few weeks, but only the chronic callous gastric ulcers in which the symptoms have lasted for several months or years. There may be

confusion, too, in the fact that occasionally gastric peptic ulcers which seem to improve somewhat, both in symptoms and in roentgen-ray appearance, later progress as cancer.

Scott, after a careful review of the literature and a review of the cases at Peter Bent Brigham and other hospitals, comes to the conclusion that from 10 to 20 per cent of the cases diagnosed clinically as chronic gastric ulcer will prove to be cancerous.

Many cases of cancer of the stomach arise without preceding symptoms of ulcer and can only be detected by X-ray examination. In these patients X-ray examination often reveals an advanced stage of cancer that cannot be cured by operation. This, however, does not seem a sufficient excuse to neglect those gastric cancers which apparently originate either as peptic ulcers or which have a clinical ulcer history.

It may be of interest briefly to review the operations on the stomach and the duodenum that I have done at St. Elizabeth's Hospital from January 1, 1927, to March 1, 1928. This comprises a period of fourteen months, and aside from the operative and pathologic features, there are some clinical observations in connection with these cases that are still fresh in my memory in addition to the actual recorded facts. There were forty-one operations done on the stomach and duodenum during this time. Sixteen were posterior gastroenterostomies, eight of which were for duodenal ulcer, one for recurrent ulcer in the gastric stump after gastrectomy, and the remainder for obstruction at the pylorus or duodenum. There were three deaths. One of these patients died five days after operation, apparently from myocarditis. Necropsy showed the gastroenterostomy in good condition. Another death, Mr. S., was a patient in whom a partial gastrectomy for extensive phagedenic type of gastric and duodenal ulcers had been done five months before. This case is reported more fully later on. The third death was in a woman, 79 years old, with carcinoma of the pancreas which had ruptured into the duodenum and gall-bladder. She died fourteen days after operation with cerebral hemorrhage. Necropsy showed the gastroenterostomy in good condition.

The gastroenterostomies were done without clamps. In addition, there was one anterior gastroenterostomy in a patient in whom a posterior gastroenterostomy had been done six years before by another surgeon for duodenal ulcer and there was apparent closure of the stoma. The patient had marked arteriosclerosis, the femoral arteries standing out like glass rods. Under a local anesthetic, an anterior gastroenterostomy was done. The stomach was enormously dilated. The patient improved for a while but eventually died.

There were sixteen partial gastrectomies: Five of these were for cancer of the stomach, one for dumping stomach and gastrojejunal ulcer following a gastroenterostomy done several years ago elsewhere, six for ulcer of the stomach, one for duodenal ulcer, two for duodenal ulcers that had perforated and been plugged by gall-bladder or pancreas, and one for gastric ulcer with an acute perforation. The patient on whom the partial gastrectomy was done for dumping stomach died. The mesocolic vessels were injured while disconnecting the gastroenterostomy. This necessitated a resection of the transverse colon. An obstruction occurred, and later there was infection. The union of the stomach to the duodenum seemed to be in good condition. The patient died from the operation upon the colon.

One of the patients on whom there was a partial gastrectomy for cancer of the stomach died. He was 75 years of age. Part of the mesocolon was included in the rather extensive resection for cancer of the stomach. The circulation to the transverse colon seemed feeble, but the patient's condition was not good, so the colon unwisely was not resected at the time. Later, there was gangrene of the colon which compelled resection and the patient died from sepsis. In a similar case, a patient, 70 years of age in whom the colon was resected at the time of operation, made a satisfactory recovery from the operation.

Of these five patients with carcinoma of the stomach, three of them were over 70 years of age. One of them, 77 years of age, died eight months after operation from acute nephritis, and without clinical evidence of any recurrence of the cancer of the stomach; another, 70 years of age, had a satisfactory recovery for several months but now, while living, apparently has a metastasis in the liver. The other two patients are so far without recurrence, one of them having been operated upon about eight months ago and the other two months ago.

There was one Rammstedt pyloroplasty for congenital pyloric stenosis.

There were six pyloroplasties, five for duo-

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denal ulcer and one for pyloric stenosis. There were no deaths.

In one case there was a simple closure of a perforated duodenal ulcer. This patient had a history of duodenal ulcer and had had medical treatment elsewhere for some time. When the ulcer perforated with typical symptoms, his family doctor earnestly advised operation, but the patient postponed it for twenty-four hours, when he was practically dying. At operation the abdomen was filled with sero-pus and gastric contents, and there was general peritonitis and a hardly palpable pulse at the wrist.

Reflex Spasm of the Pylorus and Its Relation to Diseases of the Digestive Organs, *Arch. Surg.*, 11:136-151, July, 1925) that resection of the vagus nerve high up on the stomach is of some value in pylorospasm. It does not, of course, supplant removal of an organic lesion.

There were, then, three patients out of the sixteen posterior gastroenterostomies and one anterior gastroenterostomy, that died, and two of the sixteen partial gastrectomies died. In the two deaths from partial gastrectomy, both were apparently due to resection of the colon.

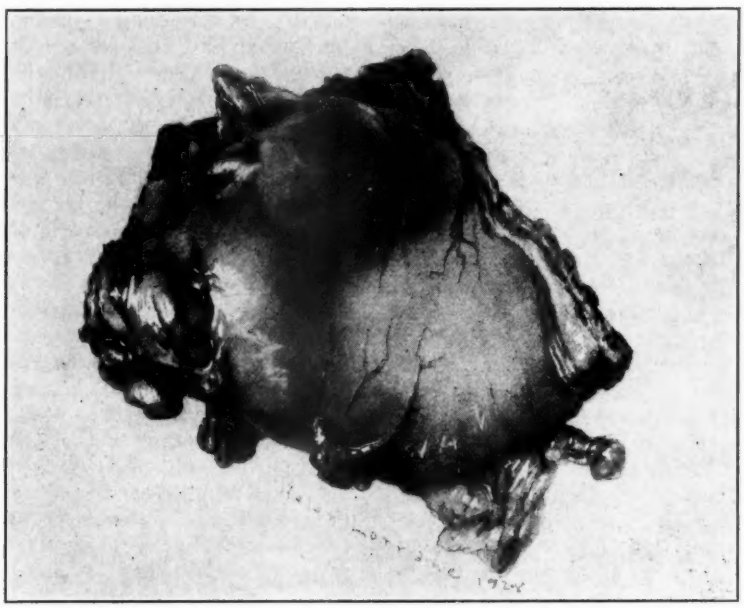

Fig. 1.—Mr. W. Anterior veiw of specimen containing perforated gastric ulcer removed by partial gastrectomy.

A few sutures were placed in the perforated duodenal ulcer. The abdominal cavity was flushed out. The patient apparently was better for a while but died three days later with a high temperature and delirium. Necropsy showed the abdominal cavity in fairly good condition. The ulcer was closed.

Besides these, several other operations have been done. There were three resections of the vagus nerve for spasm, and seven plications of the gastro-hepatic omentum. These, however, were accompanied by other operations, were of secondary consideration, and are not included in this list of gastric operations. It has been shown by Hughson (Hughson, Walter,

In all the patients that had died necropsies have been performed.

The technic of the partial gastrectomy in all these cases is one that I have been using for several years and is a modification of the Billroth I operation in which the stump of the stomach is sutured along the lesser curvature to the upper border of the duodenum and an incision is made in the anterior wall of the duodenum to flare it open. This is a very satisfactory operation. In one case in which there was almost a total gastrectomy I was able to bring the small remaining pouch of the cardiac portion of the stomach to the duodenum. This pouch was so small that it probably held only

about two and a half ounces, but has since dilated so as to double this capacity.

As regards the transformation of ulcer to cancer, I have had two patients that seem to illustrate this distinctly. One of them has been previously reported, a man 70 years of age, with a history of gastric symptoms recurring at intervals and relieved to some extent by soda, and vomiting, for forty years. Another, Mr. M., gave a history of gastric symptoms relieved by ulcer diet for thirty years. In both of these cases there seems to be marked clinical evidence that there was a preceding peptic ulcer which formed the basis of the cancer, and if they had been operated upon in the early stages a complete cure might have resulted.

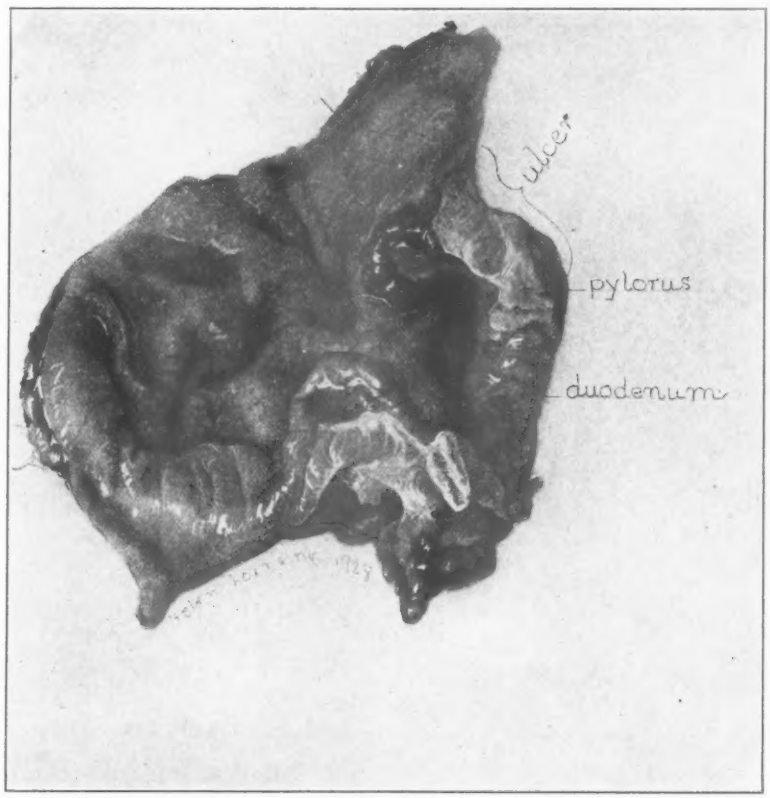


Fig. 2.—Mr. W. Interior view of perforated gastric ulcer. Same specimen shown in Fig. 1.

Among the particularly interesting cases is that of Mr. L., age 44, drug store clerk, who entered the hospital complaining of stomach trouble which began five months before admission. He first lost his appetite, then a burning sensation developed in the stomach. This burning pain would come on in the afternoon and would wake him up at night. Neither food nor soda relieved him, but aspirin did. He became nauseated and vomited and had large quantities of gas. For two weeks before admission he had no pain but could not retain his food. He lost 30 pounds during his present illness. Roentgenologic examination showed a large tumor in the stomach. Operation showed extensive involvement of the stomach with two solid masses which were adenocarcinoma. An almost complete gastrectomy was done. He made a satisfactory convalescence.

One patient, Mr. S., 51 years of age, had had a prostatectomy a year ago. His present illness began about six months ago with indigestion and pain in the epigastrium, especially after taking food, with some nausea

but no vomiting. Within the past few months the stools had been tarry. He had lost 25 or 30 pounds in weight. He complained chiefly of pain in the epigastrium and beneath the sternum, coming on irregularly after meals. There was also dull pain in the back. The patient had never vomited. He was afraid to eat any food because of the pain that it caused. Occasionally an alkaline powder would give some relief, though not complete, but this had lost its effect. A partial gastrectomy was done. There were numerous enlarged lymph nodes. without clamps. He improved for a while, then gradually sank and died. Necropsy showed a very extensive ulcer of the stump of the stomach which had perforated posteriorly so that the base of the ulcer posteriorly consisted of a large portion of the pancreas. Anteriorly it had also perforated and was plugged by the liver. The ulcer was large and the margins were irregular and apparently necrotic. There was no leakage about the gastroenterostomy. There was no peritonitis, the perforations having been stopped by the vis-

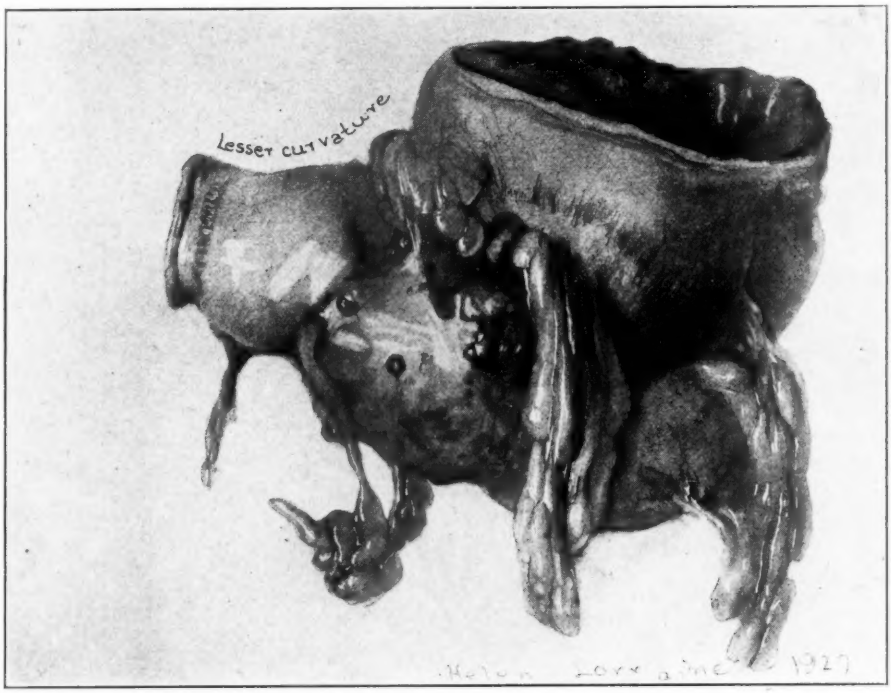


Fig. 3.—Mrs. H. External view of specimen of advanced carcinoma of the stomach removed by partial gastrectomy.

Frozen section of a lymph node, however, showed hyperplasia and no evidence of cancer. The specimen showed extensive ulceration of the phagedenic type extending from the stomach well into the duodenum. Apparently all of the actual ulcerous tissue had been removed, though the stump of the stomach was edematous. He made a satisfactory immediate recovery, and for several weeks after going home was better. The pain recurred and, in spite of medical treatment, persisted. He was extremely anemic, and had lost much weight. On February 25, 1928, I operated upon him again, doing a posterior gastroenterostomy cera. This case apparently represents a type of progressive ulceration which is difficult to control by any means. Such cases are always fatal without operation, and may occasionally be saved with operation. His death following gradual toxemia and exhaustion occurred on March 8th, after the period mentioned in this resume, but as the case was an unusual one it was thought it would be interesting to include it.

Another patient, Mr. W., an anemic man, age 34 years, a civil engineer, complained of "gnawing pain in the epigastrium". He had had intermittent attacks of nausea and vomit-

ing. Pain was worse when the stomach was empty and was relieved by food and alkali. He had had periodic attacks for the past eight years, and the present illness began nine months before admission. The first attack followed "blood poisoning." Roentgenologic examination a few weeks before entering St. Elizabeth's Hospital showed that the stomach did not empty normally. He did not vomit any blood, but often passed tarry stools. Twenty minutes before the time set for operation the patient was taken with sudden pain in the epigastrium; he "doubled up", and morphine did not entirely relieve him. His abdomen was board-like. At operation in which a partial gastrectomy was done the ulcer, which was in the anterior pyloric portion of the stomach, had just perforated. After a somewhat stormy immediate convalescence he recovered satisfactorily. (Figs. 1 and 2).

In an advanced case of cancer, Mrs. H., there was a history of a palpable tumor for more than a year. This patient was operated upon July 28, 1927. The growth was extensive and a partial gastrectomy was done. At present she is apparently without recurrence. (Figs. 3, 4, and 5).

One of the pyloroplasty operations was for persistent bleeding. The patient was a married woman, 41 years of age, with a history of having had indigestion at intervals for the past three years. At first it came on as a gnawing uncomfortable pain in the upper part of the abdomen, and appeared soon after breakfast, but was often relieved by milk. The spells would continue for several weeks, and then there would be remissions for a month or two. Three months before operation the patient vomited for the first time. After that time the indigestion was almost constantly present, with occasional vomiting. There were tarry stools. The patient was on competent medical treatment. In spite of that, however, there was but little improvement and about ten days before admission to the hospital she vomited blood. She was confined to bed for a while, and the medical treatment was continued. There was more vomiting of blood, and, finally, ten days after the first vomiting of blood, the patient had a very severe hemor-

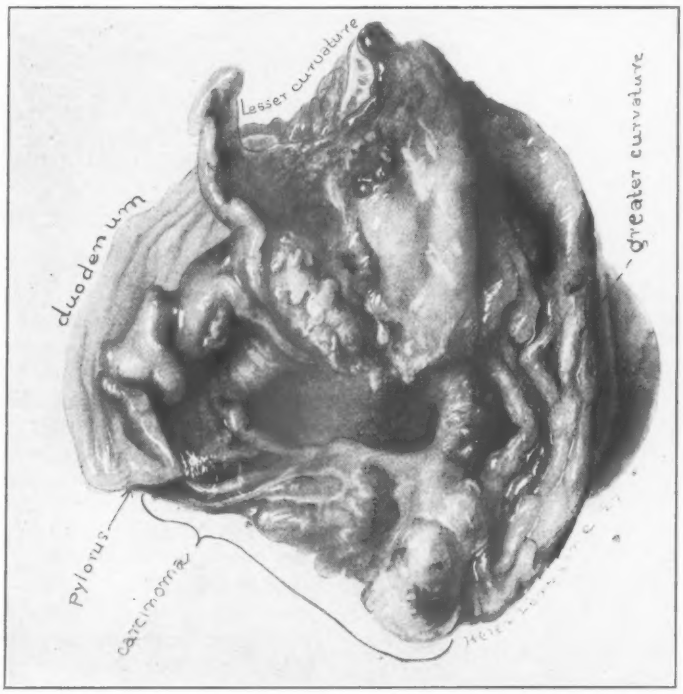


Fig. 4.—Mrs. H. Internal view of advanced carcinoma of the stomach. Same specimen as shown in Fig. 3.

rhage from the stomach and was greatly shocked. She was removed to the hospital, a pyloroplasty was done and the ulcer in the first part of the duodenum was excised. (Fig. 6). On opening the stomach it was seen that the ulcer was still bleeding. She was transfused after the operation and made a satisfactory recovery.

Most cases of bleeding from duodenal or gastric ulcer recover from this symptom by the general medical treatment, but recurrent bleeding and large massive hemorrhages demand operation.

Instead of waiting for recovery from the hemorrhage, it would seem best to operate soon afterward, provided a satisfactory donor for transfusion of blood can be had. When the hemorrhage is repeated and is sufficient to have produced a marked anemia, there seems to be no object in waiting for a recovery of strength, for bleeding may recur at any time, when, by transfusion of blood, the lost blood can be restored.

Fig. 5.—Mrs. H. Photomicrograph of specimen seen in Figs. 3 and 4. Adenocarcinoma of stomach with areas of colloid degeneration (X 150).

Undoubtedly early cases of peptic ulcer should be treated by medical means. The medical treatment should consist largely in diet. Alvarez' recommendations are based on his physiologic knowledge and consist largely of giving a glass of some combination of milk or milk and cereal between meals. He says he has not administered a dose of soda for several years. Belladonna will occasionally help the spasm. Moses Einhorn (Einhorn, Moses: Suspenders vs. Belts in Treatment of Gastric and Duodenal Ulcers. *Am. J. Med. Sciences*, March, 1928, pp.. 395-404) reports distinctly better results in the treatment of gastric and duodenal ulcers when suspenders are worn instead of belts. Belts apparently have a de-

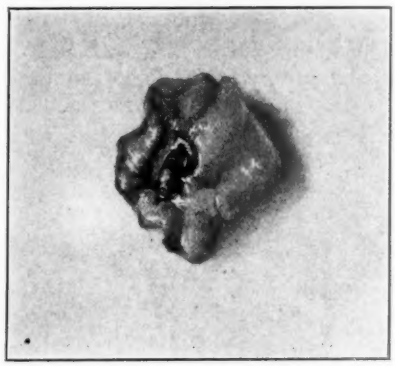

Fig. 6.—Specimen of bleeding duodenal ulcer removed by pyloroplasty. See text.

leterious pressure effect. If, however, the patient is not materially benefited after a faithful trial of medical treatment for six to eight weeks, other measures should be instituted. If the ulcer is a duodenal ulcer, medical measures may be used more safely, but if it is a gastric ulcer Alvarez says if the physician lets such a patient "drift on with medical treatment, he assumes a tremendous responsibility", when there is a possibility of the lesion being cancer or at least of becoming cancerous.

If operation is necessary, the type of operation chosen should be that which is best suited for the pathology that is found. The routine use of any one surgical procedure in all cases will often bring unsatisfactory results, whereas an adaptation of the surgical operation to fit the pathology will give the best results.

## THE TREATMENT OF MASSIVE COLLAPSE OF THE LUNG.*

By
RICHARD H. MEADE, JR., M. D.,
and
VINCENT W. ARCHER, M. D.,
University, Va.

During the last few years such an extensive literature has grown up about the subject of massive collapse of the lung that further papers not definitely contributing new facts would

*From the Departments of Surgery and Roentgenology, University of Virginia Medical School.

seem to be superfluous. In spite of the many recent exhaustive studies of this condition, very little attention has been directed to the treatment. In view of this, it seems worthwhile to report a recent case in which a simple method of treatment had an immediate and successful result.

The condition, variously spoken of as massive pulmonary atelectasis, massive collapse of the lung, and obstructive massive apneumatosis of the lung, may be briefly described as one in which a previously well aerated lung, or lobe, becomes, more or less suddenly, deflated. And this deflation is not associated with any foreign body obstruction of the bronchi, or with any increase in extrapulmonary pressure. It is associated with an increase in the intrapleural negative pressure, and, accordingly, the adjacent structures are pulled in toward the affected lung. There then appear the elevated diaphragm, the shifting of the heart and other mediastinal structures toward the collapsed lung, and the sinking in of the corresponding chest wall. In using the qualifying term "massive," we believe that, for purposes of clarification, this should always connote involvement of one or more lobes. That atelectasis of smaller parts of the lung is a common post-operative pulmonary complication has been stressed by Mastics, Lee, and others. Mastics says that pulmonary atelectasis accounts for 70 per cent of all post-operative pulmonary complications. The association between obstructive atelectasis and lobar pneumonia has recently been studied by Coryllos.

Since Mendelssohn, in 1844, first experimentally produced pulmonary atelectasis by obstructing the bronchus of an experimental animal with various substances, many investigators have repeated this work. Jackson and his co-workers especially have drawn attention to the similarity between the pulmonary collapse caused by foreign body bronchial occlusion and the massive collapse following operation. They have pointed out that in the latter condition true bronchial obstruction is produced by thick mucoid secretion. More recently, Coryllos and Birnbaum, of New York, and Lee, Tucker, Ravdin and Clerf, of Philadelphia, have successfully reproduced in dogs the condition of massive collapse of the lung by first obliterating the cough reflex and then obstructing a bronchus. The Philadelphia workers have gone one step further and used the thick mucoid material obtained from a human case to block the bronchus of a dog. It thus seems to have been fairly conclusively shown that bronchial obstruction and obliteration of the cough reflex are two important factors in the genesis of massive collapse of the lung. The nature of the initiating element, however, is still problematical.

Considering the importance attached to bronchial obstruction in this condition, it naturally follows that treatment has been directed along that line. Following the lead of Jackson and Lee, bronchoscopic aspiration of occluding secretion has been reported by Tucker, Harrington, and others, with a high degree of success.

Sir John Rose Bradford, writing in the Oxford Medicine, says that, "no special treatment is needed beyond encouraging, so far as the condition of the patient allows, the free movement of the chest in respiration." Sante, in January, 1927, reported a case successfully treated by such simple means. The patient was placed on his good side and made to cough. By means of the fluoroscope, the collapsed lung was observed to re-expand. Since this report, others have successfully used this method. Tucker, Lee, Ravdin, Coryllos, and others, feel that this simple procedure will be effective in many cases, but urge the importance of bronchoscopic aspiration in those that fail. They point out the danger of infection intervening, with production of pneumonia, abscess, or bronchiectasis.

We have recently had a case that well illustrates the dramatic changes often produced by simple postural change and coughing.

### Report of Case

A 16 year old white girl entered the University Hospital on March 24, 1928, complaining of right lower abdominal pain. The onset had been sudden and severe two days previously, but the attack had been of short duration. It recurred after twelve hours and persisted. She had been nauseated, but had not vomited. On admission, she was found to have moderate tenderness and slight muscle spasm in the right lower abdominal quadrant. Heart and lungs were apparently normal. Temperature 99° F., leukocyte count 13,500, urine normal. Later in the day, her pain having increased, and her leukocyte count having risen to 16,000, it was decided to operate upon her. At this time her temperature was 98.6,

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pulse 88, respirations 22. An exploratory celiotomy under nitrous oxide, oxygen and ether anesthesia was done by Dr. Rollins and nothing abnormal found. The appendix was removed as a routine procedure. The duration of the anesthesia was only 25 minutes.

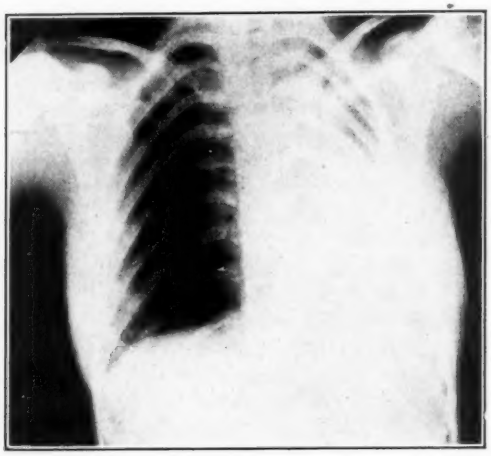

Fig. 1.—X-ray taken March 26th, the second day after her abdominal operation, and approximately twenty-four hours after the beginning of her chest symptoms. Note the entire displacement of the mediastinal structures to the affected left side; the homogeneous density; the narrowed intercostal spaces; and the elevation of the diaphragm on that side. The right side is unusually clear. These are the characteristic X-ray findings in massive collapse of the lung.

Immediately following the operation, her temperature began to rise and by 8 P. M. had reached 102.8°. The next morning, March 25th, she complained of pain in her chest and a severe headache. Examination showed dullness over the entire left chest and axilla continuous with the cardiac dullness. Her cardiac impulse was not noted. Breath sounds were absent and there were no rales. Her temperature reached 104° in the afternoon, pulse was 146, and respirations 40. By midnight, her temperature had fallen to 99° and her respirations were only 20. The nurse's note was, "wheezing sound very noticeable on respiration." The second morning after her operation, March 26th, she was complaining of severe pain in her back in the mid-dorsal region. Her temperature was 101°, pulse 100, respirations 30. Examination showed, in addition to the signs previously noted, that the left chest did not move on respiration, and appeared smaller than the right chest. The cardiac impulse was felt just outside the left nipple. The report on an X-ray at this time was—"A flat film of the chest shows the heart and mediastinal structures displaced entirely to the left of the vertebral column. The left side of the diaphragm is elevated. There is a homogeneous increase in density over the entire left chest which obscures all details. Conclusions: Massive collapse of the lung."

The patient was then turned on her right side and urged to cough. This she did, although it caused her severe pain. She coughed up several greenish mucous plugs. After carrying out this procedure for about three minutes she was turned on her back and examined. The left chest was definitely moving, though not quite as freely as the right, the cardiac impulse was felt to be just inside the nipple, and percussion note over the anterior chest was resonant, but was slightly dull in the axilla. Breath sounds were distinctly audible over the chest and axilla, though still slightly diminished.

A second X-ray was then taken within thirty minutes of the first, and showed the heart and mediastinal structures back in normal position with only a very slight increase

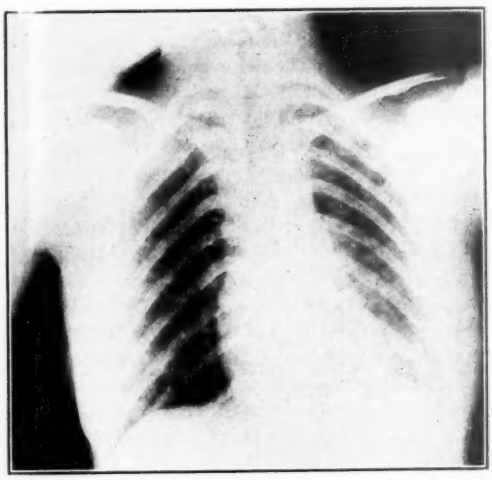

Fig. 2.—X-ray taken five minutes after having patient lie on her right side and cough several times, and within thirty minutes of the one shown in Fig. 1. There has been a return of the mediastinal structures to their normal position; only a slight haziness of the affected left side remains; and the intercostal spaces are again normal. The diaphragm is still high. It is almost always the last structure to return to normal.

in the lung markings and a slight diffuse haziness.

She continued to have her backache for the next four hours, during which time it gradually disappeared. Her temperature dropped

to 99.6 in the evening, her pulse to 88, and her respirations to 16. The next day she had no complaints, her chest was clear, and from then on she made an uneventful recovery. She was discharged as well on April 11th.


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For a more or less complete bibliography of the subject of massive collapse of the lung, the reader is referred to the articles of Coryllos and Birnbaum, and of Mastics, Spittler and McNamee.

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## NOTES ON THE COURSE AND TREATMENT OF CORONARY ARTERY OCCLUSION.

By LESLIE T. GAGER, M. D., Washington, D. C.

The clinical features of coronary artery occlusion, and the structural changes in the heart muscle of which they are the expression, have become well-defined. The outstanding symptom is the occurrence of substernal pain, usually severe, often radiating, and characteristically persistent—the status anginosus. The signs are those of myocardial insufficiency, frequently with a sudden and striking fall in blood pressure; a febrile movement and leucocytosis as the process of infarction progresses; in some instances a pathognomonic friction rub as the area of myocardial degeneration emerges externally and involves the pericardium; and, more rarely, embolic phenomena in the greater or lesser circulations if the extension of this degeneration is inward with the formation of intracardiac thrombi. There is also, in coronary thrombosis, an upward convexity of the S-T portion of the electrocardiogram, with a T-wave inversion, which is found in no other myocardial disease. Auriculo-ventricular heart block and fibrillation of the ventricles are other disorders of heart action which may follow the failure of adequate coronary blood supply, but, by reason of their nature, are rarely recognized.

### A New Responsibility

From the diagnostic point of view, therefore, a searching history, a careful physical study and the correlation of changes in findings from day to day, together with the support of the laboratory data, develop in most instances of coronary occlusion, a clear, convincing, clinical picture.

The result is that occlusion of a coronary vessel has been found to be not a rare form of arteriosclerotic heart disease; and, consequently, for its recognition and proper treatment, new responsibilities have been placed upon the clinician, very much as in the case of the definition of acute appendicitis and its train of complications a generation ago.

That an analogy between these diseases, in point of gravity, is not altogether far-fetched, may be shown by the presentation of some examples of coronary occlusion seen in private practice.

### Case Reports

*Case* 1.—E. F., male, age 51, a Jewish real estate operator, had suffered a sharp attack of substernal pain at the age of 49 years. At that time his blood pressure was found moderately elevated, there was slight peripheral arterial thickening, the heart showed no pathological change, and the electrocardiogram was normal. The diagnosis of angina pectoris was made, and, with some restrictions in the activities of his business life, this man went two years without symptoms.

After a restless night in a Pullman sleeper, and an hour after a moderate breakfast, he was seized by severe substernal pain, which was unrelieved six hours later when he was seen in consultation at his hotel. Except for muffling of the heart sounds, in a rather emphysematous chest, notable physical signs were absent. The blood pressure was 140/80, pulse 90, and regular in rhythm. The temperature was normal.

Morphine was given at once, with some relief, and the patient was kept at rest in bed. On the following day, temperature rose to 101°, while blood pressure fell to 90/50, with a pulse rate of 120. On the third day, 60 hours after the onset, a pericardial friction rub was heard. The use of morphine was continued liberally because of pain; abdominal distention was relieved by modified colonic irrigation. Digitalis was withheld until the fourth day of

illness, when a terminal arrhythmia appeared [ventricular fibrillation (?)] and the patient succumbed 76 hours from the beginning of the attack.

*Case* 2.—C. V., a man, age 63 years, American of long-lived parentage, an executive, had enjoyed good health throughout his life, and had worked under considerable mental strain and with rare vacations. At 61 years, he, like the first patient, had had a premonitory attack of substernal pain. An examination revealed a definite hypertension, but there were no abnormal cardiac signs. The electrocardiogram, however, showed involved T waves.

This patient was seen in consultation three weeks after the occurrence of a second attack of pain beneath the sternum, which came on

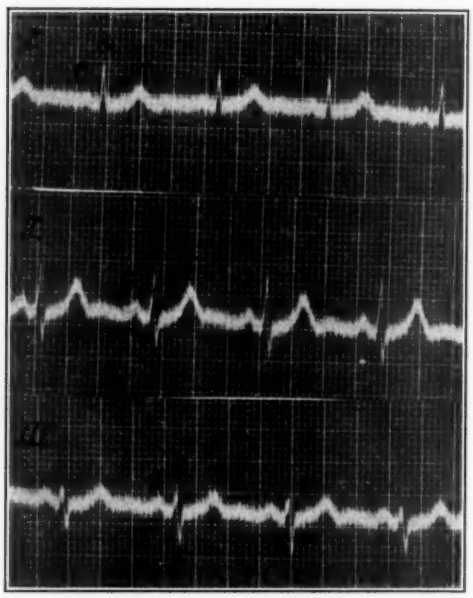

Fig. 1.—Electrocardiogram from patient with arteriosclerotic heart disease. The rather small amplitude of the R and S waves (the Q is negligible in this record) indicate poor muscular tone. The S-T portion and the T-waves illustrate the normal.

several hours after unusual physical exertion. The automobile in which he was riding had a flat tire, and, in order to get help, he walked rapidly to a garage half a mile away. The pain was severe, and persistent. He was kept in bed at his home, and the pain subsided after the first day. Throughout the three weeks, his temperature rose to 99 and 100, and his blood pressure, ordinarily 170 systolic, was 100/60 at the date of my examination. The pulse was slow, and the heart sounds were muffled. There were no murmurs nor was friction noted.

The electrocardiogram, taken at the bedside with portable apparatus, showed normal a-v conduction, no change in the time of the QRS complex, but the S-T portion of the record, in the first two leads, sprang from the descending limb before the base line (the isoelectric level) was reached, and the T-wave was deeply inverted. A temperature of 99 was recorded on this day, the heart rate being 70. No digitalis had been given.

Under the circumstances of his home and because of his symptomless progress, the patient had been allowed lavatory permission, but otherwise was kept at physical rest. A number of short business conferences had also been permitted, one on the afternoon of this day.

On going to the bathroom the next morning, the patient dropped dead. Necropsy was refused. Ventricular rupture was considered the probable event.

*Case* 3.—D. M., a man, age 50 years, American, a lawyer, was seen with his family physician six weeks after the occurrence of severe pain underneath the upper sternum, radiating into both arms. The attack came on while the patient was at rest in the evening, following the exertion during the afternoon of sailing a boat in a heavy wind. The blood pressure fell from 150 systolic to 90 systolic. After four weeks in bed, he was allowed to return to the city. Digitalis was used in his case.

At the time of my examination, the blood pressure was still 104/68. The heart was enlarged, the sounds were muffled, and a proto-diastolic gallop rhythm was present at times. There was a blowing systolic murmur at the apex. No temperature elevation was present. An electrocardiogram later showed typical coronary changes.

Most cautiously a gradual increase in exercise was allowed. Blood pressure rose gradually, and the man worked for 2½ years. A newspaper article then recorded his sudden death soon after boarding a railroad train.

*Case* 4.—G. V., a man, age 56 years, American, a physician, consulted me because of recurrent attacks of substernal pain. Except for right lobar pneumonia and empyema, with rib resection, at 38 years, he had been healthy. At the age of 48, while walking in a cold damp snowstorm, he had "bad angina", with sub-

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sternal pain extending down either arm or both, stopping on cessation of exertion and of the cold and damp weather. In the war, he had double influenzal pneumonia, without cardiac phenomena. On exercise or emotion, however, he continued to have moderate to severe pain, always stopping soon. At this time his blood pressure was 140/90. Occasionally, he could walk three or four miles without pain. Another day, the angina was bad on the least up-hill exertion. It was, as he said, very inconsistent.

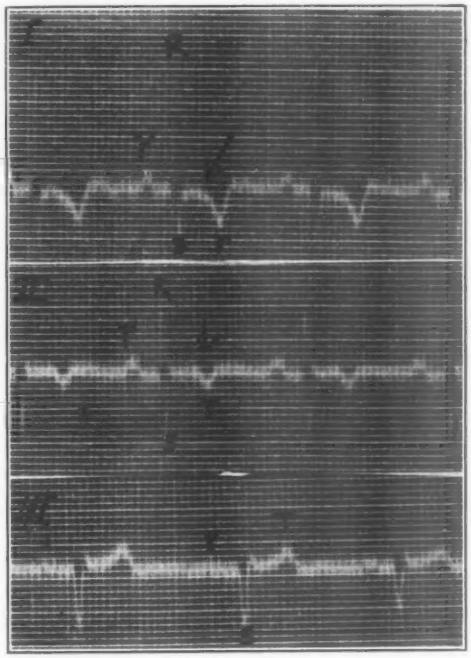

Fig. 2.—Patient, C. C., man, age 64 years (case 5). The upward convexity of the S-T interval is marked in Lead I. The T-wave is inverted in Leads I and II. There is left ventricular predominance. This record is taken 6 months after a mild coronary occlusion, and is considerably more charteristic than that taken shortly after the attack.

Electrocardiograms taken over a period of three years were entirely normal. A gastro-intestinal series, suggested because of flatulence and "chronic fermentative colitis," showed normal motility everywhere.

Ten days before he came to me, and eight hours after a lunch of indigestible food, this patient had his first spontaneous anginal pain. The attacks had been worse than usual for the preceding 12 days, following a climb up a steep bank. The duration of this last attack was nine hours.

The examination showed slight peripheral sclerosis, blood pressure 154/80, no enlargement of the heart, fair sounds, no murmurs. In the electrocardiogram appeared for the first time a distinct inversion of the T-wave in Lead II.

On a low diet and the symptomatic use of sedatives, he has been getting along comfortably and doing a large amount of scientific investigation for over two years.

*Case* 5.—C. C., a man, age 64 years, American, an office worker, had been in good health except for occasional attacks of indigestion, which were relieved by restriction of diet and alkaline powders. There were no previous attacks of anginal pain. Blood pressure had been normal, and careful examination had shown only slight arterial change and no evidence of structural heart disease.

This patient was seen two weeks after an attack of pain described as beneath the lower sternum. It appeared at midnight, six hours after a moderate supper. The pain was severe, conveyed to the patient a due sense of its gravity, and lasted 1½ hours. It did not radiate. The bowels were somewhat constipated. The attack was regarded as indigestion, and the patient kept at work.

Examination revealed a normal tension, 130/80, no enlargement of the heart, rate 72 beats per minute, with occasional premature systoles. Systolic murmurs, however, were present both at the apex and aortic area. The electrocardiogram showed in Lead I a convex S-T interval and an inverted T-wave.

The patient has had no further attacks in the last six months and has gone without interruption to his work, which, it should be added, is light in character, and within a few blocks of his home.

*Case* 6.—A. B., man, 52 years of age, a physician in active practice, was seen with the complaints of substernal oppression and tingling in the right hand, symptoms which had made their appearance five months before examination. Both systolic and diastolic arterial tension were then found elevated.

There had been no previous ill health except influenza, followed by pneumonia, at 50 years.

For six weeks prior to the present attack, the patient had never felt better. Then a mild laryngitis was followed by a return of the

substernal discomfort. This was not brought on by effort, and was steady and persistent.

The physical findings were obesity, a blood pressure of 158/108, peripheral vessels not felt but retinal arteries somewhat irregular and tortuous, slight cardiac enlargement, sounds of good quality.

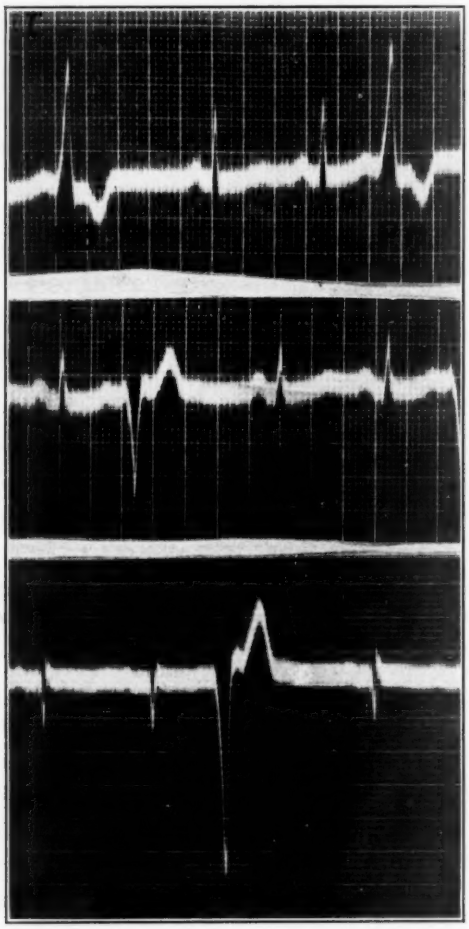

Fig. 3.—The "coronary T" wave is not to be confused with the inversion of the T which occurs without special significance in the case of premature ventricular beats. This record is from a patient with obesity, hypertension and arteriosclerotic heart disease.

The electrocardiogram showed left ventricular predominance, a QRS group which in Lead I was 0.12 sec. in duration, and only in Lead III an S-T convexity. With this amount of ventricular predominance as evidence of hypertrophy, the abnormal duration of the QRS group loses some of its significance, and the value of the S-T change in the third lead alone is questionable.

With reassurance and good sleep induced by bromides, this man regained at once a feeling of perfect well-being, and, with more attention to relaxation, has done well.

### Comment

These histories have been cited to give background and perspective to the problems of the management of patients who survive the immediate effects of coronary thrombosis and give evidence of varying degrees of myocardial infarction. Other cases might be added to show that clear electrocardiographic, or even anatomic, evidence of coronary occlusion may be found where the history fails to suggest more than uncomplicated angina pectoris, or, in some cases, any symptoms or signs of heart disease.

### Treatment

It is obvious that the treatment of these patients requires the utmost individual attention, but it may safely be stated, as a general guiding principle, that the earlier the diagnosis and the more adequate the protection from heart strain, the better is the opptrtunity for the repair of the damaged muscle and the recovery of the patient. There is an old adage regarding heart disease that applies well here: give the patient the best prognosis; treat him according to the worst.

Specifically, rest is the first essential in treatment; absolute rest during the active stage of infarction, and relative freedom from sudden and over-exertion later. I have found some patients walking the floor with the pain of coronary occlusion, but the bed is the safest place. For the agonizing, persistent, choking pain, morphine should be freely used. It is conceded sometimes to be life-saving. It relieves pain, lessens anxiety, and promotes sleep and quiet. Nursing care is important;—in the grave cases the necessity of the patient's feeding himself or going to the bathroom may be the extra exertion which decides the outcome. A light, but not necessarily liquid, diet is advisable; distention is to be guarded against and relieved by enemas, two tube irrigation being most suitable.

The use of digitalis is debatable, but I am convinced that it is best withheld until the need for stimulation clearly exceeds that for rest.

How long the patient should be kept at rest

is important and also debatable. "A few days in bed" is certainly not always sufficient, as in the case of the second patient, and, on the other hand, six weeks or six months are just as arbitrary periods. My own criteria for allowing the patient up after occlusion are much as they are in acute rheumatic heart disease; the maintenance of normal temperature and pulse levels, the subsidence of cardiac dilatation, and, in the case of coronary disease, the rise in blood pressure after an abnormal

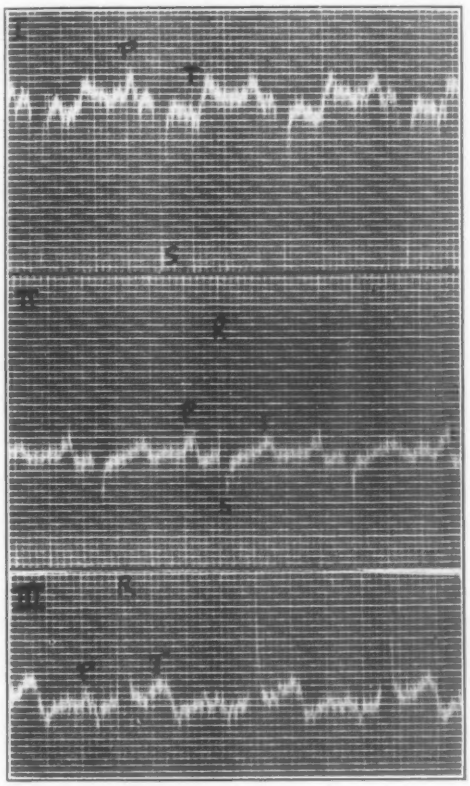

Fig 4.—An electrocardiogram taken two days after an attack of continuous substernal pain, suggesting occlusion. Man, age 56, blood pressure 190/124. There is right ventricular predominance. The P-wave is notched. The T-wave is atypical and diphasic in Lead I, and springs from the descending limb of R in Lead III.

hypotension. Graduated increase in exercise and observation of the cardiac response to effort should precede the return of the patient to the usual, or modified, routine of life and work.

The fact that persons with the smaller areas of infarction of the heart muscle escape without the lesion being recognized, or even giving rise to symptoms, should give encouragement, but not cause lack of caution in dealing with coronary occlusion and its structural and functional sequelæ.

1614 *Rhode Island Avenue, N. W.*

## INFANTILE DIARRHEAS.

By THOMAS D. JONES, M. D., Richmond, Va.

The diarrheas occurring in infants and children are known under a great variety of names, such as summer diarrhea, cholera infantum, ileocolitis, infectious diarrhea, fermentative diarrhea, gastro-intestinal indigestion, and many of the older writers refer to some types of it as "bloody flux".

In spite of the progress that has been made in the field of pediatrics in the past few years, summer diarrhea remains a formidable foe to the pediatrician. Its incidence remains high and its prevention and management present one of the most troublesome problems met with in pediatric work. Accurate statistics dealing with its frequency are hard to obtain. The most important reason for this is that most Health Boards only require that the infectious types be reported, which constitutes a small percentage of the cases, and many of the milder cases of the simple diarrheas are never seen by physicians. Wilkins, of Baltimore, has recently made a very interesting contribution to this phase of the subject. He kept 623 normal infants under two years of age under observation from June 1st to November 1st. 60 per cent of this group had no gastro-intestinal upsets during this period. 27 per cent developed simple diarrheas. 7.6 per cent had typical dysentery, and 5.3 per cent were border-line cases between simple diarrhea and dysentery. These studies were made on infants coming under the care of Child Welfare Stations, and probably show a somewhat higher incidence than would occur in private practice. In the last edition of Holt and Howland, they state that, for a five year period in New York city, there were 12,439 deaths from measles, pertussis, scarlet fever, typhoid fever and diphtheria, effecting all ages, and for the same period there were 13,351 deaths from diarrheal diseases in infants under two years of age.

### Classification of Diarrheas

Many attempts have been made to reach a satisfactory classification of the disease, but at the present time there is apparently no satisfactory basis for an absolute differentiation

of the various types. In Davison's most recent article, he groups them under two heads: Group 1—"The various bacillary dysenteries", and the other types he refers to as "Ordinary diarrhoeas". Perhaps the most comprehensive classification for practical purposes is that of Hill, which is as follows:

Mechanical;

Fermentative;

Proteolytic;

Infectious.

The great majority of cases encountered in general practice may be grouped under one of these four heads. The fermentative and proteolytic types represent the large and motley group of unknown origin so far as the bacteriology is concerned. Attempts have been made to hold various bacteria responsible for this group, such as B. Welchi, B. Coli, and a putrefactive or fermentative flora, but these organisms have been found with equal frequency in the stools of perfectly normal children, and children dying from these types show no evidence of an inflammatory process involving the intestines. The term dysentery is usually applied to the infectious types and is associated with the passage of mucus, pus and blood (which usually comes on within the first 24 or 48 hours) and is accompanied with tenesmus. Simple or ordinary diarrhea is the term generally applied to the mechanical, fermentative and proteolytic types. The latter group is rarely accompanied by the passage of blood and pus and tenesmus seldom occurs. The differentiation between the simple or ordinary and infectious types may sometimes be difficult to make clinically as some of the severe cases of simple diarrhea may show mucus and blood in the stools, and some of the mild infectious cases may occasionally show little or no blood or pus.

Cultures are therefore essential in these cases if accurate diagnoses are made. Wilkins found bacillus dysenteriae in 90 per cent of his cases that were associated with the passing of blood and mucus. Zahorsky regards the cytology of the stool as an important aid in the diagnosis of border-line cases, and considers that liquid stools (diluted 2/3 with water) showing more than ten cells to the ordinary low power field as strong evidence of an infectious process. In the infectious types the Flexner organism is the one most frequently found (70 per cent) and produces the mildest symptoms. The Shiga organism is much less frequently encountered (10 per cent) and is much more serious. Ameba are rarely found in infants, but should not be overlooked as they do occasionally occur. The stools should be fresh and warm and examined on a warm slide if the ameba are suspected. Certain strains of streptococci are sometimes the only organisms found, while staphylococci are very rare, few authentic cases having been reported, and it is apparently a uniformly fatal type, being regarded as an accidental infection by most authorities. Saenz reports a case of spirochetal dysentery of 11 years' duration which had resisted all forms of treatment; spirochetes were found swarming in the stools. Neoarsphenamine effected a cure in two weeks. Typhoid and paratyphoid should be considered in these cases.

### Diagnosis of the Different Types of Diarrheas

*Mechanical:* This type is rare in children under one year of age. There is usually a history of over-feeding or the ingestion of improper articles of foods or foreign bodies, such as paper, unripe fruits, etc. There is not usually much temperature in these cases, and there is little or no prostration. Abdominal pain is frequently a prominent symptom, and there may be nausea and vomiting. One should be very guarded in making a diagnosis of this type, as all of these symptoms may be present in acute surgical conditions.

*Fermentative:* This is by far the most frequent type encountered in infants, and has been estimated as constituting about 80 per cent of all cases. The stools are usually green and watery, acid in reaction, have a not unpleasant acid odor, and are quickly absorbed by the diaper. The buttocks soon become excoriated. The temperature may range from 100 to 105, vomiting is the rule, but may be absent in some cases. Dehydration develops rapidly and acidosis is often seen; frequently a history of a diet too high in carbohydrates is obtained.

*Proteolytic:* In this type the onset is not usually as abrupt. The bowel movements may not be as frequent but the toxic symptoms are usually more profound. The stools are brownish in color, alkaline or neutral in reaction, and the odor is very foul.

*Infectious Types:* The stools are not large, are usually acid, but may occasionally be alkaline (Shiga) and associated with the passage

of blood, mucus and pus. There is severe colicky pain preceding each bowel evacuation with severe tenesmus. The symptoms usually come on suddenly, but may sometimes follow what appears to be at first a simple diarrheal condition; a positive diagnosis rests upon laboratory findings. All cases associated with the passage of blood and pus are usually considered as dysentery or infectious diarrhea.

### Treatment

*Prophylaxis:* Most measures falling under this head are applicable to all forms of diarrhea, so that this part of the discussion is meant to include all types of the disease. I shall not attempt to discuss the modes of transmission; indeed, very little is apparently known concerning this phase of the subject. Organisms of the infectious types have apparently never been found outside of the human body or human excreta. It is generally believed that food contamination is responsible in a large measure.

The two most important predisposing causes are, first, heat, and second, artificial feeding. The effect of heat, while not entirely understood, is an unquestionable factor in the causation of gastro-intestinal diseases. It apparently plays an important part in causing an over-growth of bacteria normally found in the gastro-intestinal tract. Arnold has made some very interesting observations on the effect of heat on dogs, using normal and fever dogs for the experiment. He found that the upper half of the small intestine was normally slightly acid in reaction and contained relatively few bacteria, the lower portion being neutral or alkaline in reaction, and containing a fecal type of bacteria. The stomach normally secretes acid into its lumen in order to acidify its contents, and usually in excess. When the contents of this part of the intestinal tract are slightly acid, something is produced by the healthy intact mucous membrane that causes the destruction of bacteria. He thinks it is probably a bacterio-static substance. He found that the gastric mucosa did not concentrate acid in its lumen when there was an elevation of internal temperature, and that the upper part of the small intestine was alkaline or neutral in its reaction. Bacteria fed to dogs in water did not appear in the cecum, but, when suspended in an alkaline solution, made their appearance in the cecum in less than an hour. The observations might suggest that the feeding of acidified milk to infants might have a tendency to diminish their susceptibility to summer diarrhea. Studies of the problem from this angle might prove helpful. It has been estimated that normally about thirty trillion bacteria are thrown off from the body during the 24-hour period. The estimated weight of the dried bodies of this enormous number is seventy-five grains. The depleting effect of heat is a strong causative agent in causing an over-growth of the intestinal bacteria normally present. It is obvious, therefore, that the infant should have every possible protection from the deleterious effect of heat. It is surprising how often infants are found to be over-clothed in hot weather—flannel belly bands, flannel skirts, etc.,—the mothers being guided in this matter by the advice of some mid-wife or "practical nurse," entirely losing sight of the fact that the infant is a human being with even a more pronounced susceptibility to the effects of overheating than is the case in the adult and should at all times be clothed according to the surrounding temperature without regard for the season of the year. Sudden chilling or undue nervous stimulation may affect the gastro-intestinal secretions in such a way as to cause a diarrhea.

*Artificial Feeding:* In spite of the advances that have been made along the line of artificial feeding, breast milk remains the ideal infant food, and has never been duplicated. Some idea of the protection that breast feeding gives the infant against gastro-intestinal disease may be gathered from the study of Wilkins' series. There was not a single case of dysentery in the breast fed group of his series, and no deaths occurred from gastro-intestinal disease. Only 10 per cent of the breast fed infants had gastro-intestinal upsets, against 50 per cent in the artificially fed baby. Davis has compiled some statistics which show that between 80 and 90 per cent of infant deaths between the ages of two weeks and one year occur in bottle fed babies, and that, of infants reaching the age of two weeks, one in five of the bottle babies die before they reach the age of one year, while, of the breast fed babies, only one in thirty fail to reach the one year mark. It is believed that the great majority of mothers can successfully nurse their infants. Minnesota carried out a breast feeding campaign in a certain area to prove this point, and reached

practically every mother in this area. The percentage of breast feeding ranged from 96 per cent at the end of the second month, to 72 per cent at the end of the ninth month. Every effort should be exerted to establish and maintain breast feeding, especially for the first summer. Putting the infant on the bottle in the first few months of life should always be regarded as a serious matter, and should receive very thoughtful consideration. When feeding difficulties arise at this age, one should be very certain that the food and not the baby is at fault before discontinuing the breast. The former is rarely at fault in the breast fed infant. However, the determination of this point is fraught with some difficulty, but can usually be arrived at if a careful study is given the case.

*Over-Feeding:* The infant actually requires less food in hot weather than in cold weather. Not so much energy is required to maintain the body heat and the effect of heat on the enzymes diminishes the infant's digestive capacity so that what is a normal well balanced formula for the infant under normal conditions may mean an excess of food when the above conditions obtain, so that it is always safe to cut down on the caloric intake during the very hot periods and no new foods should be added to the infant's diet under these conditions.

*Immunization* by vaccines given subcutaneously have been found to be of value in controlling epidemics of dysentery. Walker has attempted immunization by the oral administration of vaccines, but did not lessen the incidence by this method.

*Active Treatment:* The importance of the role played by parenteral infections; such as otitis media and mastoiditis, in the production of diarrheas should always be kept in mind. In such cases the eradication of such a focus frequently brings about a prompt recovery from the diarrhea. There are many therapeutic measures applicable alike to all cases. It would probably be better, however, to discuss some of the special measures to be applied to the different types first.

*Mechanical Type:* If one could be absolutely certain of the diagnosis of this type, a brisk purge, such as castor oil or milk of magnesia, might be justifiable. But ruptured appendices have occurred too frequently following such treatment for what was considered "green apple colic" to justify such a procedure except in very exceptional cases, so that "watchful waiting" with the withholding of food for a while and the administration of an anodyne, if necessary, is the safest treatment. Nature will do the rest, in this type of diarrhea.

*Fermentative Type:* Feeding is by far the most important therapeutic indication in this type of the disease. If there is much vomiting, it is often advisable to withhold all foods for ten to twelve hours, giving only water or very weak tea, sweetened with saccharine. Carbohydrates and fats should be withheld until there is a change in the character of the stools, which usually occurs in from forty-eight to seventy-two hours under appropriate treatment, and then should be gradually added to the formula. Protein milk is, as a rule, well taken. There are several reliable powdered protein milks on the market suitable for this purpose. Older infants sometimes have a distaste for these dilutions, and, when this is the case, boiled skimmed milk dilutions with casec (calcium caseinate) added and sweetened with saccharine will usually be well taken. One ounce (12 level tablespoonfuls) added to a quart of water will give a 3 per cent protein mixture. After two or three days, a part of the cream may be left on the milk, later using whole milk dilutions (preferably acidified), gradually adding carbohydrates after the stools have become normal in frequency. Excoriation of the buttocks may be a troublesome complication and demand some attention. Leaving the napkin down and allowing the air to come in contact with the inflamed area is, as a rule, all that is necessary. In severe cases it may be necessary to use locally calamine lotion or Lassar's paste.

*Proteolytic Type:* This type comprises a very small percentage of the total number of cases. Its recognition, however, is important, as this is the only type of diarrhea in which carbohydrate feeding is absolutely indicated. The distaste for food is profound. There is less dehydration than the other types of diarrhea. The toxic symptoms are very pronounced. A mild purge of milk of magnesia is perhaps permissible in this type of case unless the bowel movements are very frequent. Barley water with dextri-maltose or lactose added will usually bring about the change of intestinal flora and change the reaction of the stools in from twenty-four to forty-eight hours.

Fats and proteins may be gradually added as the condition improves.

*Infectious Types:* Feeding is less important in this type of case than in the others. The stools are acid in the majority of these cases. Protein milk is probably the best food for the first few days, later giving lactic acid milk, but the character of food given probably plays a small part, as the process, like many other infections, is self-limited and will run a course of from several days to several weeks in spite of treatment. Specific therapy of Flexner serum may prove beneficial if given early, but its real value is uncertain.

*General Measures Applicable to All Types of Diarrhea:* Vomiting is frequently a very troublesome symptom, and may be serious. The withholding of food for a brief period and giving water is all that is necessary in the majority of cases. If this fails, the stomach should be washed out, and fluids given through a tube are sometimes retained when not retained if administered by mouth. Absorption through the stomach is the most satisfactory method of administering fluids and should always be attempted. Failing in this, other methods have to be resorted to. Little or nothing can be administered by bowel as the intestinal tract is so irritable that it is usually expelled immediately. In the absence of abdominal distention, the intra-peritoneal route is the next method of choice. The advantages of this procedure over subcutaneous injections are that the procedure is less painful, can be done in less time, there is less shock, and there is a better retention in the blood stream. Blackfan found that when this method was used, 60 per cent of the fluid was absorbed in the first hour. The usual site for the needle puncture is the median line just below the umbilicus. The abdominal wall should be lifted up and the needle directed upward and slightly backward. There is little danger of puncturing the intestine unless there is great abdominal distention. From one to four hundred c.c. may be given at a time when this route is used. Gettings and Donnelly recommend twenty to thirty c.c. per pound of body weight. Saline or 3 to 5 per cent glucose may be given by this route, and may be repeated in twelve to twenty-four hours. If abdominal distention is present, it is safer to use the subcutaneous method. Not quite as much fluid can be given in this way, but the results are almost as good.

If ketosis, or acidosis, develops (a distinction that is hard to make clinically), glucose should be administered intravenously.

Tenesmus may be severe, especially in the infectious type, and treatment for this symptom may be demanded. Bowel irrigation with saline or sodium bicarbonate solution will often relieve this symptom. If this fails, injection of tannic acid solution (1 dram to the pint) may be used, or the injection of starch water and laudanum, or the use of a cocaine suppository (¼ grain for a child three years old) may be necessary to give relief. If there is severe abdominal pain, opiates may have to be given, but for the nervous symptoms which are so frequently present bromides will usually suffice.

The loss of mineral salts from the body is tremendous. Courtney and Fales found that sodium, potassium and chlorine make up 11.2 per cent of the ash in normal stools, and 48.7 per cent of the ash in diarrheas, so that the routine administration of an alkaline in all cases is a clinically safe procedure. Sodium bicarbonate, 10 to 15 grains every two hours, is perhaps the best. Brandy, ½ ounce well diluted in twenty-four hour periods, may prove helpful in some cases.

The so-called astringents are probably of no value. Green states that they are not needed in the mild cases and are of no value in the severe cases. The time-honored practice of giving bismuth is perhaps harmless and still has some adherents. The subcarbonate is perhaps the best preparation and may be given in fifteen grain doses every two or three hours. In more recent years the administration of bacterial cultures has been a popular practice. Recent investigations of the numerous preparations on the market have shown that the life duration of any of these cultures is short and may become worthless at any time. Bass sums up the result of his work along this line, as follows: "In the instance of tablets, none of those examined were found to contain more than a few viable organisms of any kind, and it is calculated that if all bacteria present had been bacillus acidophilus it would take about one billion tablets to contain as many bacteria as are contained in 1,000 c.c. of acidophilus milk". A questionnaire sent out by the Council on Pharmacy and Chemistry of the A. M.

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A. to seven different investigators brought a unanimous reply that there was no evidence of intestinal implantation by the use of solid or semi-solid cultures. The Biologic Laboratory of the Bureau of Chemistry of the United States Department of Agriculture found the lowest count on solid cultures, and contaminating micro-organisms were common. However, the B. B. tablets appear to be widely used even at this time. Metchnikoff, with all of his enthusiasm for such therapy, admitted that he had never succeeded in changing the intestinal flora by the administration of bacillus bulgaricus.

The B. A. culture (liquid) appears more easily adopted to intestinal growth by implantation and is harmless in nature. The B. A. culture was approved by the Council on Pharmacy and Chemistry of the A. M. A. last year. The 120 c.c. vials were found to contain not less than 600,000,000 viable organisms to the c.c. at time of sale. The dose recommended for an adult was 15 c.c. twice daily, followed by lactose. There is, therefore, apparently some scientific justification for the use of the B. A. culture in diarrheal conditions. The writer, however, has not been impressed with the results obtained.

Blood transfusions are frequently indicated in some of the severe cases, particularly when the duration has been much prolonged. From 20 to 60 c.c. of blood per kilo of body weight is the amount usually recommended. Repeated intra-peritoneal injections of citrated blood has apparently given good results in some hands. Change of climate, tonics, and the administration of iron-conveying foods are indicated in all prolonged cases of any type.

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*Medical Arts Building.*

## DIPHTHERIA CONTROL IN VIRGINIA—OCTOBER, 1926—MARCH, 1928.

By
H. G. GRANT, M. D.,
and
D. H. ANDERSON, M. D.,
Bureau of Epidemiology, State Department of Health, Richmond, Va.

Before 1927 there had been no attempt on the part of the State Board of Health to carry out state-wide control of diphtheria by the use of toxin-antitoxin. The first local campaign in Virginia was held on Chincoteague Island, in Accomac County, in 1923. It was conducted by the State Board of Health, through its Department of Epidemiology, in co-operation with the county health officer of Accomac County and the physicians of Chincoteague Island. In this campaign over one-half the children on the Island were immunized, and, as a consequence, a marked reduction in diphtheria took place. From that time, although many school clinics were held throughout the State, no special attention was given to diphtheria control until June, 1926, when a county-wide campaign was put on in Brunswick County. Here over 4,200 were immunized on the first drive, and since that time the total has been increased to 6,500.

Beginning in January, 1927, a campaign was started by the State Board of Health through the Department of Epidemiology by holding county-wide clinics throughout the State. A publicity agent was taken on, and additional physicians and nurses were employed. At first, due to the fact that the personnel was limited, we confined our efforts to working up interest in counties, setting dates for the clinics and helping local doctors during the first week of each clinic. In this way forty-four counties were worked in and 44,700 children were immunized. The plan worked fairly well, and was used because personnel was limited and also because in many

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counties the physicians preferred to do the work themselves. These clinics were all pay clinics; in most cases a charge of fifty cents was exacted, which paid for the toxin-antitoxin and the services of the physician. The objections to this method are, first, that it is difficult for the doctors to keep the time of the schedule; second, that it is difficult to arrange the schedule satisfactorily to all the physicians; third, that it is very difficult to divide up the receipts from the campaign in a fair manner, and, fourth, the doctors—naturally, with other things to do—do not take the intense interest in the campaign that the State workers do.

The more satisfactory method is for the publicity agent to secure the consent of the physicians, then to enlist the support of the division superintendent of schools and, through him, the interest of school teachers. When these results are accomplished, the dates are set for the clinics. In our publicity we used pamphlets supplied by the State Board of Health and by the Metropolitan Life Insurance Company, posters supplied by the Metropolitan Life Insurance Company, advertisements in the local newspapers, and—most important—lectures and home canvassing carried out by the school teachers. It is hard to evaluate the merits of different forms of publicity, but it is felt the work of the superintendents of schools and the school teachers has been chiefly responsible for the success of our clinics. The time of the publicity agent was spent almost entirely in interesting the teachers and getting them to create an interest in the pupils and, also, in the homes throughout the county. This method was used in preference to the publicity agent attempting to arouse the interest of the children directly. In this manner forty-seven counties were worked in and 147,238 children immunized.

Below are given two tables showing the results attained by the two methods.

TABLE No. I.

COUNTIES IN WHICH THE LOCAL DOCTORS ADMINISTERED THE TOXIN-ANTITOXIN.

| *County* | *School Attendance* | *No. Immunizations* |
|---|---|---|
| Alleghany | 2,932 | 200 |
| Amherst | 3,259 | 600 |
| Bath | 1,173 | 300 |
| Bland | 1,208 | 800 |
| Botetourt | 3,020 | 900 |
| Caroline | 2,949 | 450 |
| Carroll | 4,472 | 3,500 |
| Clarke | 1,123 | 300 |
| Cumberland | 1,392 | 300 |
| Dinwiddie | 3,038 | 1,500 |
| Essex | 1,401 | 400 |
| Floyd | 3,636 | 500 |
| Franklin | 4,893 | 800 |
| Frederick | 1,744 | 300 |
| Giles | 2,601 | 1,200 |
| Gloucester | 2,121 | 800 |
| Goochland | 1,411 | 1,800 |
| Hanover | 3,194 | 800 |
| Highland | 899 | 200 |
| King William | 1,671 | 500 |
| Lee | 4,183 | 3,000 |
| Louisa | 4,056 | 500 |
| Loudoun | 3.271 | 350 |
| Lunenburg | 2,544 | 1,500 |
| Madison | 1,614 | 800 |
| Montgomery | 3,122 | 200 |
| Orange | 2,530 | 500 |
| Prince Edward | 2,512 | 700 |
| Prince George | 1,494 | 2,000 |
| Prince William | 1,983 | 2,500 |
| Pulaski | 2,950 | 1,500 |
| Richmond | 1,693 | 100 |
| Roanoke | 4,718 | 1,000 |
| Rockingham | 5,733 | 3,000 |
| Scott | 8,550 | 2,000 |
| Shenandoah | 3,688 | 1,200 |
| Smyth | 4,406 | 3,000 |
| Stafford | 1,099 | 350 |
| Surry | 1,710 | 350 |
| Warren | 1,490 | 1,000 |
| Washington | 5,928 | 2,000 |
| Westmoreland | 2,451 | 500 |
| Wythe | 3,608 | 300 |
| York | 1,445 | 200 |
| | 124,915 | 44,700 |

TABLE No. II.

COUNTIES IN WHICH THE STATE WORKERS ADMINISTERED THE TOXIN-ANTITOXIN.

| *County* | *School Attendance* | *No. Immunizations* |
|---|---|---|
| Accomac | 8,717 | 6,000 |
| Albemarle | 5,404 | 2,525 |
| Amelia | 1,583 | 2,500 |
| Appomattox | 1,684 | 1,500 |
| Arlington | 2,929 | 3,531 |
| Augusta | 6,209 | 4,000 |
| Bedford | 5,386 | 6,000 |
| Buchanan | 3,716 | 1,200 |
| Brunswick | 3,146 | 6,500 |
| Campbell | 5,026 | 3,000 |
| Charles City | 976 | 500 |
| Charlotte | 3,540 | 5,000 |
| Chesterfield | 3,672 | 4,000 |
| Dickenson | 2,972 | 6,500 |
| Elizabeth City | 3,901 | 2,500 |
| Fairfax | 3,515 | 400 |
| Fauquier | 3,508 | 2,400 |
| Grayson | 3,804 | 2,000 |
| Greene | 891 | 1,500 |
| Halifax | 8,290 | 6,000 |
| Henrico | 3,728 | 3,000 |
| Henry | 3,664 | 2,500 |
| Isle of Wight | 2,428 | 500 |
| James City | 641 | 1,000 |
| King George | 616 | 500 |
| Louisa | 3,056 | 2,000 |

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| County | School Attendance | No. Immunizations |
|---|---|---|
| Mathews | 1,397 | 500 |
| Mecklenburg | 5,314 | 8,000 |
| Nansemond | 4,110 | 1,500 |
| Nelson | 2,741 | 2,000 |
| New Kent | 931 | 1,000 |
| Norfolk | 5,872 | 1,000 |
| Northampton | 2,970 | 3,000 |
| Nottoway | 2,717 | 3,000 |
| Pittsylvania | 12,263 | 10,000 |
| Page | 2,414 | 1,500 |
| Powhatan | 1,029 | 1,200 |
| Princess Anne | 2,373 | 1,200 |
| Rappahannock | 1,194 | 1,200 |
| Rockbridge | 3,352 | 2,000 |
| Russell | 5,335 | 6,500 |
| Southampton | 4,027 | 5,000 |
| Spotsylvania | 1,897 | 2,500 |
| Sussex | 2,114 | 282 |
| Tazewell | 5,537 | 6,000 |
| Warwick | 1,065 | 800 |
| Wise | 10,034 | 12,000 |
| Totals | 171,988 | 147,238 |

Table No. I shows the records from forty-four counties. In these counties a charge of fifty cents was exacted, and the local physicians administered the toxin-antitoxin. The total school attendance of the forty-four counties was 124,915. The total number of children, school and pre-school, immunized was 44,700. If we use the school attendance as an index by which to measure the success of our clinics, the total number of children immunized in this group was 35.7 per cent of the total school attendance.

Table No. II gives the record for forty-seven counties. In most of these counties a charge of fifteen cents was exacted, a few were free, and in some twenty-five cents was charged. The total school attendance of the forty-seven counties was 171,988. The number of children immunized was 147,238, or 85 per cent of the school attendance.

A comparison of these two tables leaves no doubt as to the method to be preferred. Publicity was the same and the same amount of time was spent in creating interest in each type of clinic. If it is possible, it is much better to conduct free clinics and to have the clinics conducted by State workers.

The clinics were conducted in the schools. The co-operation of the State Department of Education was assured before the campaign was launched. The Schick test was not used nor did we promise that the children could be Schick tested at a later date. The object of the campaign was to attain the maximum reduction of diphtheria at a minimum cost. With this object in view, toxin-antitoxin was administered without Schick testing; but it was always our aim to immunize the lower age groups of children. It is felt that it would have been much more difficult to reach the pre-school children by any other method than working through the schools. Below is shown a study of twenty-seven counties taken at random, giving the age grouping of children immunized.

| Counties | Under 5 | 5-9 | 10-14 | Over 14 | Age Not Stated | Total |
|---|---|---|---|---|---|---|
| Amelia | 281 | 866 | 922 | 215 | 58 | 2,342 |
| Amherst | 49 | 225 | 182 | 75 | 10 | 541 |
| Appomattox | 32 | 91 | 65 | 26 | 297 | 511 |
| Caroline | 26 | 116 | 120 | 25 | 16 | 303 |
| Carroll | 452 | 1,039 | 1,110 | 583 | 228 | 3,412 |
| Charlotte | 554 | 1,429 | 1,490 | 547 | 773 | 4,793 |
| Chesterfield | 108 | 893 | 1,030 | 144 | 523 | 2,698 |
| Dickenson | 1,718 | 2,199 | 1,844 | 450 | 38 | 6,249 |
| Dinwiddie | 91 | 308 | 308 | 70 | -- | 777 |
| Goochland | 33 | 236 | 345 | 107 | 106 | 827 |
| Grayson | 555 | 750 | 588 | 76 | -- | 1,969 |
| Hanover | 28 | 170 | 237 | 57 | 230 | 722 |
| Henry | 56 | 923 | 1,020 | 274 | 147 | 2,420 |
| King George | 32 | 197 | 193 | 37 | 14 | 473 |
| Lee | 610 | 1,329 | 1,126 | 154 | 261 | 3,480 |
| Mecklenburg | 1,241 | 2,275 | 1,990 | 479 | 321 | 6,306 |
| New Kent | 64 | 343 | 402 | 117 | 2 | 928 |
| Pittsylvania | 909 | 3,522 | 3,468 | 958 | 383 | 9,240 |
| Prince William | 191 | 766 | 923 | 293 | 38 | 2,211 |
| Rappahannock | 69 | 313 | 425 | 117 | 242 | 1,166 |
| Roanoke | 55 | 159 | 103 | 6 | 45 | 368 |
| Rockingham | 228 | 822 | 822 | 102 | 72 | 2,046 |
| Russell | 989 | 2,392 | 2,232 | 553 | 159 | 6,325 |
| Scott | 275 | 544 | 330 | 16 | 14 | 1,179 |
| Smyth | 288 | 1,000 | 989 | 161 | 354 | 2,792 |
| Spotsylvania | 29 | 101 | 118 | 45 | 800 | 1,093 |
| Washington | 64 | 313 | 334 | 52 | 24 | 787 |
| | 9,027 | 23,321 | 22,716 | 5,739 | 5,155 | 65,958 |

| | |
|---|---|
| Total number immunized | 65,958 |
| Number under 5 years | 9,027 |
| Number 5-9 years | 23,321 |
| Number 10-14 years | 22,716 |
| Number over 14 years | 5,739 |
| Age not stated | 5,155 |
| % under 5 years | 13.7 |
| % 5-9 years | 35.4 |
| % --9 years, incl. | 49.1 |
| % 10-14 years | 34.4 |
| % --14 years, incl. | 83.5 |
| % over 14 years | 8.7 |
| % age not stated | 7.8 |
| Total | 100.00 |

Of the total of 70,672 children who came to the clinics, 4,714, or 6.7 per cent did not complete the course of treatment. Weather conditions was the chief cause for the children not finishing treatment. Most of these clinics were conducted during the winter. A few children refused to complete the treatment on account of the reaction from the first dose.

### Method of Conducting Clinics

In those clinics conducted by the State, the doctors or nurses administered the toxin-antitoxin. No nurse, however, was allowed to administer toxin-antitoxin until she had been under the supervision of a State physician for sufficient time to make herself thoroughly acquainted with the technique. Every effort was made for speed and efficiency, although careful sterilization of needles and syringes was carried out. The needles were sterilized in some cases by boiling, but in most instances by immersing in absolute alcohol, as it was found that repeated boiling dulled the needles and made them very brittle. The syringes were boiled before the clinic started. Ten c.c. record syringes were generally used and 26 gauge, ½ inch needles. The arms were sterilized with tincture of iodine or absolute alcohol. We had no record of an infected arm. The clinicians and nurses were instructed to administer toxin-antitoxin intramuscularly, the deltoid muscle, as a rule, being used for this purpose.

Each worker traveled alone. The school teacher very willingly took the records, lined up the children, painted the arms with iodine, in some cases changed needles, and wiped off the arms with absolute alcohol following the administration of toxin-antitoxin. In this way the work was materially speeded up and it was not unusual for one worker to visit from eight to twelve schools in one day, and to immunize from 500 to 1,000 children daily.

Record forms were distributed to the teachers in all the clinics; they were asked to note the name and age of the child, the date of the injections, and also to make records of any unusual reactions. The keeping of records was the only unsatisfactory feature of the campaign. No matter how much care and time was taken to explain to the teachers, both white and colored, what we required in the way of record keeping, the records as a whole were not well kept. A study of all records shows that in a high percentage no ages were given, and that the dates of receiving the toxin-antitoxin were not properly checked. To have satisfactory and accurate records of such a campaign, it would be necessary to supplement the staff by a person who has no duties other than to keep records.

The clinics were held almost exclusively in the rural sections. The cities have health departments and conduct their own campaigns. Below is given a table showing the number of children immunized in the various cities previous to and during 1927.

TOXIN-ANTITOXIN IMMUNIZATIONS IN CITIES OF VIRGINIA.

| | *Previous to* 1927 | 1927 |
|---|---|---|
| Alexandria | 2,800 | 1,000 |
| Richmond | 6,659 | 3,042 |
| Newport News | 2,030 | 1,501 |
| Petersburg | 1,500 | 600 |
| Lynchburg | 1,000 | 496 |
| Harrisonburg | 288 | 373 |
| Roanoke | 2,200 | 800 |
| Norfolk | 12,316 | 2,569 |
| Fredericksburg | 120 | 765 |
| Danville | 266 | 785 |
| Staunton | 0 | 0 |
| Winchester | 0 | 1 |
| Portsmouth | 826 | 817 |
| | 30,005 | 12,749 |

DIPHTHERIA DEATHS AND RATES.

| | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 |
|---|---|---|---|---|---|---|---|
| | | | *Cities* | | | | |
| Deaths | 64 | 70 | 60 | 45 | 50 | 49 | 31 |
| Rates | 10.6 | 11.5 | 9.2 | 6.8 | 7.4 | 6.9 | 4.1 |
| | | | *Counties* | | | | |
| Deaths | 335 | 393 | 277 | 171 | 188 | 179 | 111 |
| Rates | 19.2 | 22.3 | 15.8 | 9.7 | 10.6 | 9.9 | 6.0 |
| | | | *State* | | | | |
| Deaths | 399 | 463 | 337 | 216 | 238 | 228 | 142 |
| Rates | 17.0 | 19.5 | 14.1 | 8.9 | 9.6 | 9 1 | 5.5 |

The clinics were held almost exclusively in the rural sections and principally during the fall and winter months. Owing to the fact that many of the smaller schools opened late in October and closed early in April, it was necessary to schedule much of our work dur-

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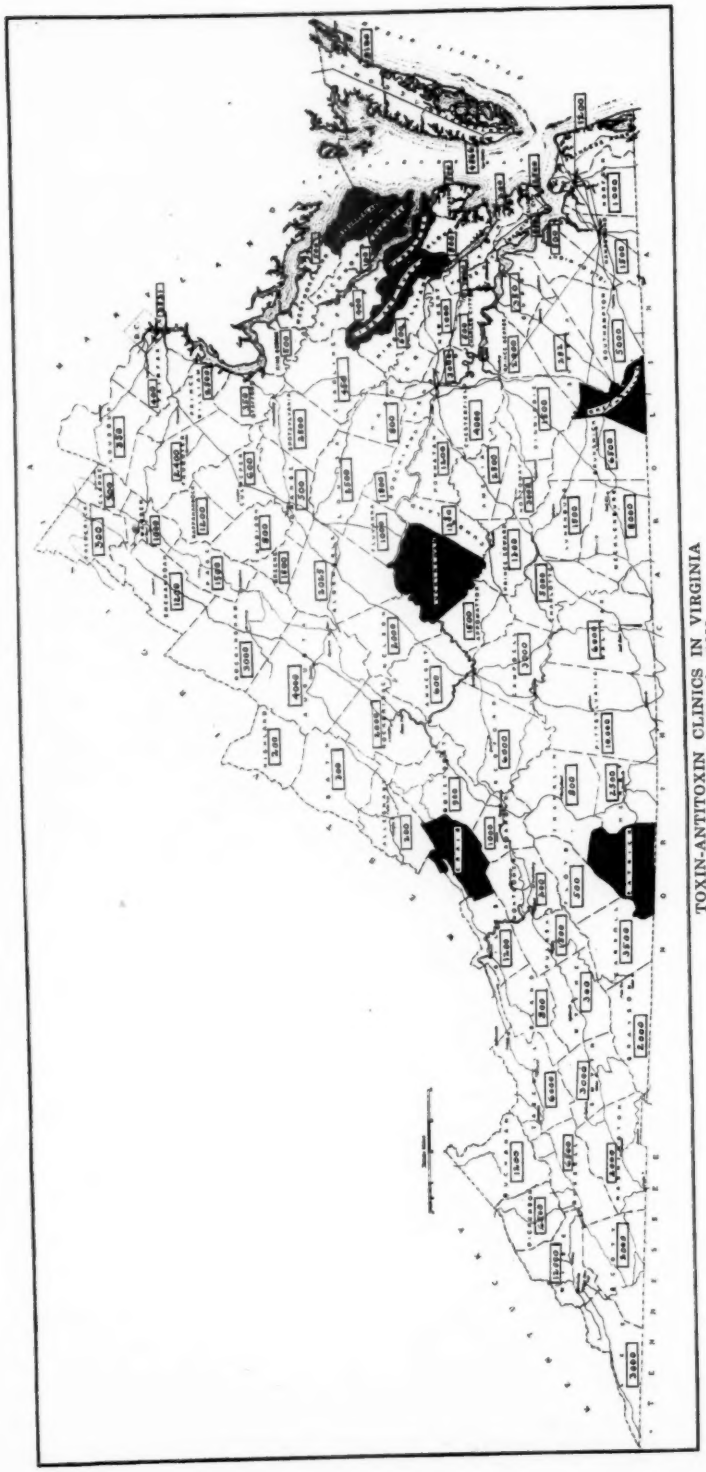


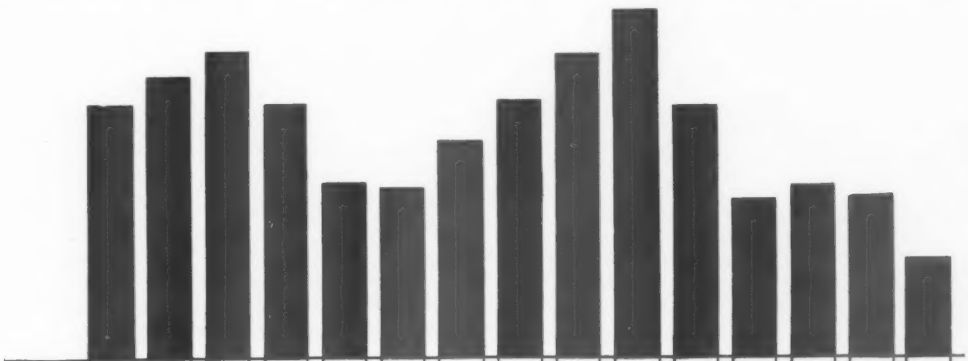
TOXIN-ANTITOXIN CLINICS IN VIRGINIA
October, 1926—March, 1928.
The blocked numbers represent the number of children immunized. Counties in black have not held clinics during time reported.

ing the winter months in order to visit the schools during the session. The rural schools are, as a rule, on unimproved roads which, during rainy weather, become almost impassable. During bad weather our workers were greatly hindered by the condition of the roads. This factor also influenced the attendance at the clinics, as the school attendance was very poor and very few mothers brought the pre-school children. During rainy weather our workers were often forced to ride horse-back, or walk, in order to reach their clinics. One worker doing a day's schedule walked ten miles, rode horse-back several miles up the mountain side, besides having the car towed several miles through clay roads. This, of course, meant that more workers were required to carry on the clinics. As a rule, we scheduled all of the schools through one week. This meant that our workers remained through three weeks, in order to administer three treatments to each child. In spite of unfavorable weather conditions and poor roads, our workers were able to complete their schedules, and in no county were they forced to discontinue the work.

After our first few clinics, we always gave four weekly dates to one community, as it was noticed that by doing so the number of children receiving the treatment was increased anywhere from 25 to 50 per cent.

It was our plan to put on a county-wide diphtheria prevention clinic in each of the one hundred counties in the State. By March, 1928, although the objective was not reached, county-wide clinics were held in ninety-one counties and 191,938 children had been immunized, exclusive of the work done in the cities. The work is still in progress.

It was surprising the interest in this effort to control diphtheria. After the campaign was under way for a month or two, we at all times had more requests for clinics than we could handle. Our only difficulty was to secure sufficient funds and personnel. The county superintendents of schools and the teachers throughout the State, the physicians, and the ministry all took an active part in the work; and most of them have expressed willingness to conduct future campaigns of a similar nature. Several counties have conducted a second successful campaign, and many others are planning now to put on a second series of clinics. In the few counties which have so far conducted their second campaigns, the results have been very gratifying. The percentage of pre-school children in the second campaign is much larger than that of the first. It is felt that the first campaign had a decided educational value for the mothers of the counties, and was responsible for their bringing the smaller children to the school clinics.



| Year | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Deaths | 302 | 340 | 374 | 316 | 221 | 216 | 278 | 334 | 399 | 463 | 337 | 216 | 238 | 228 | 142 |
| Rate | 14.2 | 15.8 | 17.2 | 14.2 | 9.8 | 9.5 | 12.1 | 14.4 | 17.0 | 19.5 | 14.1 | 8.9 | 9.6 | 9.1 | 5.5 |
| Estimated Cases | 5146 | 5734 | 5546 | 6777 | 4059 | 2909 | 3065 | 4958 | 7760 | 8735 | 5249 | 3786 | 3639 | 4040 | 3489 |

STATE OF VIRGINIA.

Annual Death Rate from Diphtheria per 100,000 Population.

Herewith is shown a map giving the counties worked in and the number of children immunized.

### Cost of the Campaign

The cost was approximately $35,000.00 to the State. It is estimated that where the local doctors administer the toxin-antitoxin the cost to the State runs about ten cents per child; whereas, where the State workers do everything, the cost runs higher, probably from twenty to twenty-five cents per child.

### Results of the Campaign

It is not fair to claim too much for this one year's campaign against diphtheria. *The records for* 1927 *show a reduction in cases of* 18.4 *per cent and a decline in deaths from diphtheria of* 38.1 *per cent over the year* 1926. A study of the chart given below shows us that similar reductions have taken place in years when toxin-antitoxin was not used extensively. The year 1917, for instance, shows a reduction in deaths from diphtheria from 316 to 221, or 30 per cent less than 1916. So, also does 1923 show a marked reduction over 1922, and 1924 over 1923.

In view of the fact that diphtheria increased generally throughout the United States during the year 1927, and also that there are now in Virginia over 250,000 children immunized with toxin-antitoxin, the assertion seems justified that the marked reduction of 1927 over 1926 in deaths from diphtheria was chiefly due to the widespread use of toxin-antitoxin. Virginia for 1927 shows a rate of 5.5 deaths per 100,000 population from diphtheria—the lowest in her history.

This work of the State Department of Health will be continued by a voluntary organization, the Anti-Diphtheria League of Virginia.

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## INFECTED TONSILS AS A FACTOR IN THE ETIOLOGY OF RHEUMATISM.*

By MEADE EDMUNDS, M. D., Petersburg, Va.

The writer realizes that there are two very vague and indefinite terms in the title of this paper, namely, rheumatism and infected tonsils, both of which are often used loosely by the laity and by the profession as well. Discussing the subject of infection in the tonsils is something like discussing religion, for we never seem to get very far. After all, it is no easy matter to say when a tonsil is infected, and if we do arrive at such a conclusion, by what signs and symptoms have we done so? If there is a history of attacks of acute tonsillitis, we are certainly justified in assuming that the tonsils may be the focus of infection. On the other hand, the absence of such attacks does not by any means exclude the possibility that the focus may still be located in these organs. The most difficult cases to size up are the adults who can give no definite history of attacks of tonsillitis, but who have some remote pathology, the cause of which we think is due to some focal infection.

Enough clinical evidence has accumulated to prove beyond a doubt that a chronic focus of infection in the tonsils may give rise to general systemic disorders, so that a discussion of this point would seem useless. On the other hand, it is quite timely and proper to ask ourselves why and how a focus of infection does produce remote systemic disorders, and why is it that in one individual it may cause an arthritis, in another an iritis, in still another an endocarditis, and so on.

Since this is part of a symposium on rheumatism, we will take for example acute articular rheumatism, or one of its twin brothers, chorea or endocarditis, and attempt to show how a chronic focus in the tonsils could be a factor in its etiology. There are two possible explanations to account for such lesions being located remotely from the original focus of infection; one is the absorption of toxins from the primary lesion and the other is the passage of living bacteria from time to time into the blood stream and their localization in the part affected. Now, which of these factors are more frequent? I venture to say that if an expression of opinion on this point were obtained from each of you, that the vast majority would say the absorption of toxins rather than the passage of bacteria into the blood stream. However, enough experimental work has been done to prove that a chronic or an intermittent bacteriemia is not at all uncommon. Tanaka and Crowe,[1] from the department of pathology of Johns Hopkins University, in a paper entitled, "Direct Blood Stream Infection Through the Tonsils," say that the clinical evidence that systemic disturbances secondary to chronic tonsillitis are often due to the localization of bacteria in the affected part is supported by the following facts: "That the epithelium

*Read before the Southside Virginia Medical Association, at Suffolk, March 13, 1928.

which lines the crypts in a normal tonsil has a very rich blood supply and that the large collecting veins which surround each crypt lie just under the basement membrane. A destruction of this epithelium, in whole or in part, is the most common microscopic finding in chronic tonsillitis. Often this lining epithelium is replaced by scar tissue and occasionally definite ulcers may be found. In either case large numbers of blood vessels have become thrombosed and afford a pathway for the entrance of bacteria into the blood stream." Dr. William S. Baer and Walter Baetjer have succeeded in a large series of arthritic cases in recovering hemolytic streptococci from excised lymph glands, and suggest that bacteriemia is not uncommon. Ballenger,[2] in a paper, "Bacteriemia Associated With Acute Hemolytic Streptococcic Throat Infections," believes that direct infection of the blood-stream is the most important route by which the hemolytic streptococcus is conveyed from its primary focus, whether of the acute or chronic type, and says further that a chronic bacteriemia can most plausibly explain the term subinfection as used by Adami.

The frequency of cardiac involvement following acute infections of the throat is strongly suggestive of the passage of bacteria into the blood-stream. Brenneman[3] has called attention to the frequency of abdominal pain in children in throat infections and suggests the probability of a blood borne infection to the mesenteric and retro-peritoneal glands. Granting, then, that the passage of bacteria into the blood-stream from a chronic focus does occur, and occurs much more frequently than we often suspect, why do they in one individual produce arthritic changes of acute nature, in another of a chronic nature, in others no joint changes at all, but an iritis, a pyelitis, a chorea, an endocarditis, or possibly no symptoms whatever? Who among you could say definitely that you are not having at times or have had bacteria pass intermittently into your blood-stream with no or only slight manifestations? The reasons for such phenomena as these can best be explained, I believe, on the following grounds, namely, the resistance of the individual and the virulency and the elective affinity of the bacteria. If the amount of toxins or microorganisms is small and immunity well established, symptoms will likely be absent. On the other hand, symptoms appear when the infection in the tonsils increases, local resistance decreases, or when immunity is lessened by any intercurrent acute disease, physical or mental stress, poor nutrition, anemia, or from unknown causes. Just as certain drugs are selective in their action, for instance, digitalis is selective for heart muscle, belladonna for involuntary circular muscle, so likewise bacteria and their toxins possess selectivity. Rosenow has shown the development of certain ulcers of the stomach and duodenum to be the result of a specific localization of bacteria. He cultivated bacteria from such tissues and injected them into the blood or peritoneum of animals and found them to be selective for similar tissues and with like results. This characteristic of bacteria, namely, elective affinity or selectivity, in conjunction with their virulency and the resistance of the individual, will explain, I believe, the many different manifestations which occur remotely from the original focus, whether it is in the tonsils, teeth, nasal accessory sinuses or elsewhere.

The removal of tonsils has been widely practiced in recent years, and the reasons for their removal are numerous. However, it has been very difficult to get a statistical report of a series of cases sufficiently large to justify very definite or scientific conclusions as to the benefits derived therefrom or the effect on the incidence of such diseases as rheumatism, endocarditis and chorea. Kaiser[4] has recently published a paper entitled, "Incidence of Rheumatism, Chorea and Heart Disease in Tonsillectomized Children," based on a control study which certainly gives some valuable information, and is based on a sufficiently large number of cases to be of real scientific value. He made a survey of 48,000 school children, in 20,000 of whom the tonsils had been removed and 28,000 of whom they had not. The majority of the 20,000 had had their tonsils removed for a period of five years. He says that the tonsillectomized child not yet infected has a much better chance to escape rheumatic infection over the same period of time than the child whose tonsils have not been removed. In those cases who had rheumatic infection prior to tonsillectomy, recurrent attacks were less frequent than in the unoperated group. Rheumatic heart disease was found in 450 of the 20,000 operated on, and in 817 of the 28,000 who were not, but he calls attention

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to the fact that, of the 450, many of them had the heart disease prior to the operation. A careful analysis of 478 cases of carditis showed that 83 per cent developed the condition before tonsil removal and 17 per cent following tonsillectomy. Kaiser, in his final conclusion, says this: "Based on a control study of 20,000 tonsillectomized children it must be concluded that the tonsil is a factor in the causation of rheumatism, scarlet fever and chronic heart disease, and the tonsillectomized child is assured greater protection against these infections than his companions whose tonsils have not been removed."

Figures from the United States Army, dealing with adults, show that the incidence of tonsillectomies has increased among the men admitted from 3 per cent in 1913 to 17 per cent in 1925, while the incidence from rheumatic fever has declined during that same period from 6 per cent in 1913 to 1.1 per cent in 1925. These figures show very definitely the relation between infection in the tonsils and the rheumatic syndrome. Kaiser's paper particularly shows the importance of removing foci of infection before the development of rheumatism and endocarditis, and also brings out the fact that tonsillectomy is no safeguard against recurrent attacks of rheumatism when the patients have had rheumatism prior to the operation. Therefore, the lesson to be learned is prevention. Any manifestations in a patient which point to a rheumatic syndrome, particularly if following frequent sore throats, justify tonsillectomy, in my opinion, regardless of the appearance of the tonsils, provided, of course, there are no other outstanding or definite foci of infection. In other words, I do not feel that one can say very much about the amount or character of the infection by examining the throat, and I think this is the least important part of the examination in determining the advisability of removing tonsils. What is far more important is a careful history, particularly in regard to sore throats, and the exclusion of other possible foci of infection, including a thorough physical examination by an internist. After this is done, then I believe one is justified in removing the tonsils regardless of how they look, if we feel reasonably certain that the condition from which our patient is suffering is due to a focus of infection, and if we do not promise the patient too much. This applies especially to adult cases, for it is very important that a correct diagnosis be made; otherwise, both the operator and patient will be disappointed in the end results. On the other hand, the situation in children is somewhat different. I believe too many adults are having their tonsils removed and too few children. In other words, I think many of the adult cases are not studied thoroughly, incorrect diagnoses are made, and no improvement results from tonsillectomy, because the tonsils were not at fault. With children it looks as if the opposite condition prevails; many who are having throat symptoms are allowed to go on, operation is postponed because somebody wants the child to be ten, twelve or fourteen years old before being operated on, and, in waiting, many of these cases develop rheumatism and chronic heart disease. I believe that tonsillectomy in children who have shown any indications whatever of infection in these organs, is almost as important from the public health standpoint as the administration of toxin anti-toxin and typhoid inoculation. If the incidence of rheumatism, chronic heart diseases, and scarlet fever is reduced to the extent as shown in Kaiser's study, why then is this not true? I am of the same opinion as a prominent pediatrician who said, in discussing heart disesae in children, "No child should ever be allowed to have but one attack of tonsillitis," and I am almost ready to say that no child should ever be allowed to have even one attack.

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## POST-OPERATIVE CARE.*

By HARRY HYLAND KERR, M. D., C. M., Washington, D. C.

The remarkable advance of surgery in the past generation has developed along three general lines. First, the epochal discovery of the cause and the prevention of sepsis by the immortal Lister opened the field and made pos-

*Read at the Roanoke meeting of the American College of Surgeons, January, 1928.

sible all modern surgery. Infection had prevented all but the absolutely essential operations. Its control robbed the actual surgical intervention of much of its danger and allowed operative manipulation in an ever-widening sphere of disease. Daily we see conditions, only a short time ago considered purely medical, come under the surgeon's knife.

Secondly, the elaboration of technique that has gone on with the other improvements in the science of surgery has gradually extended the field to all parts of the human anatomy. Today there is no cavity or corner of the human body that has not been exposed in the living patient.

Finally, the researches of surgery have advanced our knowledge of human physiology so that today surgery has broadened its field and is often truly prophylactic in its application. Thus, from the mere care of wounds and injuries in its earliest days, surgery has advanced through devious pathways to the heights of the healing art. To surgery belongs the credit of bringing to light many of the truths of other branches of medicine.

But with this glorious record and the promise of more triumphs in the future we, as humble doctors, must not forget that, after all, the individual patient is our main responsibility and our chief duty.

It is with the idea of reviewing some of the homely lessons that do so much for our patient's comfort and safety that I thought it worth while to talk a brief time of their care after operation.

The comfort and safety of the patient is, of course, predicated on the condition before operation and the seriousness of the operative interference.

For the simple elective operations, in the comparatively healthy individuals, proper preparation and gentle surgery insures a convalescence with little suffering and a rapid return to normalcy. I am a strong believer, even in such cases, in the inhibition of anodynes and hypnotics and the early administration of fluids either orally, rectally, subcutaneously or intravenously. The picture of the poor patient refused any water or morphine after operation is a pitiful sight, thankfully no longer seen in our surgical wards.

Sleep is a great restorer. There is no time it is more needed than after operation and there is no better way to produce it at this time than by the use of morphine hypodermatically. The injection of one-sixth of a grain of morphine at the termination of operation during the closure of the wound is far better than waiting till the patient's discomfort demands it, even if it has been already used in the preparation. We should not hesitate to give morphine in adequate doses for the first three post-operative days. For our patient's comfort there is no more important therapeutic weapon at our command to combat the physical and mental suffering.

For their actual well being during this time, water is most needed. The great solvent should be freely administered in any and every way possible. But do not forget that though larger quantities of water may be given by bowel or vein, repeated sips by mouth do more to allay the thirst.

The great need after operation is water, but certain solutions are indicated under varying conditions. Thus, in cases of partial or complete bowel obstruction, the post-operative fluid should be hypertonic salt solution given by vein to correct the diminished chlorine content of the blood. In cases of acidosis following prolonged vomiting or starvation, the fluid given after operation should be glucose in appropriate percentages. After thyroidectomy for exophthalmic goiter, Lugol's solution in the intravenous or rectal fluid helps to counteract the wave of thyrotoxicosis that follows operation. The great need is fluid, but the fluid should be selected for the individual case in its mode of administration, its quality, and quantity.

In many operations the movement of the diaphragm is interfered with and the respiratory excursion thereby restricted with always the danger of pulmonary congestion. It is, therefore, necessary that the patient be passively rolled first on one side and then on the other every few hours after recovery from an anesthetic. In this way, venous drainage of each lung is assured and the dangers of pulmonary complications are markedly reduced.

From these general considerations let us look at the problems of the possible complications in the surgery of the various regions of the body.

Cranial surgery, the youngest child of her glorious mother, is fraught with great diffi-

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culties and relatively high mortality. It has been by the management of the post-operative period in cranial surgery that its advance has been encouraged. The necessarily long operations in this field are accompanied by more than usual shock. Transfusion stands out as the best therapeutic measure for this condition. The collection of the patient's own blood by a suction apparatus may permit transfusion of his blood that has been lost, or the administration of whole or citrated blood during operation should be used freely. No craniotomy should be begun without provisions for a transfusion. The control of intra-cranial pressure by the administration of hypertonic solutions. both before and after operation, has been a great boon. Hypertonic glucose solution produces the most lasting effect and has the additional advantages of supplying nourishment at this time.

In thoracic surgery, pulmonary collapse must be guarded against. In clean thoractomies, pulmonary distention during closure will often suffice, but the possible accumulation of fluid should be immediately aspirated and the aspiration repeated as often as necessary. Posture is of tremendous importance immediately after operations in these cases. Later, during active convalescence, breathing exercises and calisthenics are important to restore lung function to its maximum.

Massive collapse of the lung is a complication that may arrive following any operation or even trauma. Its early detection and relief may be of vital importance. In all doubtful cases the X-ray will be diagnostic.

Abdominal surgery now occupies the forefront and represents the bulk of the major cases in our operating rooms. Adequate preparation has done much to simplify the post-operative care in these cases. The discontinuance of the old purgation the night before operation and abundance of carbohydrate food and fluids the day before has made the immediate convalescence much more comfortable. The exhibition of a soporific the night before operation is appreciated by the nervous patient.

After abdominal operation the semi-sitting position and the immediate administration of water by drip or subcutaneously with morphine administered during wound closure will allow the patient to pass the first post-operative period in comparative comfort.

The managment of that great bug-bear, "gas", is also much simplified by adequate preparation. Even the simplest abdominal section will be accompanied by peristaltic paralysis, lasting forty-eight hours or more. During this time it is useless to "beat the tired horse up the hill" with enemas or purgatives. The bowel should be given perfect rest till it has recovered its tone, and then emptied only by enemata. Loosenisg the adhesive binding and the insertion of a short small rectal tube to allow the escape of gas trapped in the rectum will bring relief till the stethoscope tells us that peristalsis has sufficiently recovered to respond to a rectal injection.

Distention must not be misjudged, however. One cannot afford to let precious hours slide by by failing to diagnose post-operative obstruction. Here the stethoscope is of immense value. It will detect the high pitched tinkle of the obstructed loop before it can be found or localized by any other means save the fluoroscope. Prolonged vomiting and unusual cramp-like pain should make us suspect ileus and put us on our guard. High enterostomy under local anesthesia is life saving in such cases and should not be delayed.

In pelvic surgery the question of urinary retention must be considered. It is unwise to catheterize the urinary bladder unless it is necessary. There is nothing more distressing to the patient than a prolonged cystitis following what may be a simple operation. Catheterization should be delayed long enough to allow possible exciting reflex stimuli to subside or the muscular tone to return. It is far safer to sit our patients up passively than to run the risk of cystitis.

For surgery of the extremities, proper splinting and position are of paramount importance. With the limb splinted in the position of rest and elevated to secure good venous drainage, the patient should not suffer unduly. Great pain after the reduction and setting of fractures means trouble. One must keep in mind the possibility of ischaemic paralysis and not ignore the crying of the child or complaining of the adult. Early mobilization after proper reduction was advocated many years ago by Championiere, but many modern surgeons still fail to appreciate the reduced morbidity ob-

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tainable by guarded early mobilization, massage and passive motion.

If our surgery has been properly done and our care after operation adequate, we should be able to correct many of the ills that flesh is heir to with safety and comfort. To the world at large surgery is appreciated for what it has done, but feared for the pain and suffering it entails. A valuable step in advance will be the lessening of this pain and suffering.

1744 *N Street.*

## ABORTION.*

By CHARLES H. LUPTON, M. D., Norfolk, Va.

The term abortion as used in this paper will include the termination of pregnancy prior to the viable period, that is, prior to the 28th week.

### Etiology

Many varied causes are thought to play a part in the etiology of abortions, but the most common causes are either abnormalities of development of the foetus or mother, or diseased conditions of the mother or foetus. According to most of the reports in the literature, it appears that defective development of the early embryo or foetus, whether resulting from the ovum or spermatozoon, plays a very important part in the causation of a large number of abortions. Macomber classifies the causes of abortions as follows: defective germplasm (may be either maternal or paternal); mechanical, and nutritional. He also states that abortion is twice as frequent when fertility is known to be low. Huntington, reporting on 39 cases of abortions, stated that 21 were due to defective germ-plasm, and that 3 others were probably due to defective germplasm or to arrested development due to retroversion.

It is known that faulty position or mal-development of the uterus has a definite relation to the causation of a number of abortions, retroversion being a fairly common cause of abortion. Abortion occurs more frequently in multiparas than in primiparas. There is a condition termed habitual abortion, that is, when women will abort and no abnormality can be found. It is probable that either defective development of the embryo or focal infections cause a big majority of habitual abortions. Nickel and Mussey state: "Abortion in guinea-pigs has been produced experimentally by intravenous injection of green-producing streptococci isolated from foci of infection in patients who had aborted. The premature emptying of the uterus in animals seems to be due to elective localization and growth of the streptococcus in the placental site, and death of the foetus due to invasion of its blood stream by this streptococcus. These streptococci lost their specificity on artificial mediums. Control strains from foci of infection in patients never having aborted, injected in like manner and in equivalent doses, did not produce experimental abortion."

It has long been known that syphilis causes abortion in many cases. Pelvic infection is often the cause of abortion, especially if the infection is within the uterus. General systemic conditions, especially when there is marked toxemia, are believed to be the cause of a number of abortions. There are also conditions when the micro-organisms are transmitted directly to the foetus, resulting in its death.

Of the exciting causes of abortions, probably sudden fear and trauma are as common as any, but fear and trauma are the cause of abortions in a small number of cases. Hillis states in his series that trauma and accident resulted in only 13 abortions in 1,000 cases. Missed abortion is a condition that occasionally we have to take into consideration. Waters, writing on missed abortion, states: "It is not of infrequent occurrence. It accounts for some instances of prolonged amenorrhea, accompanied by ill health otherwise unexplained. It is a very probable explanation for evidences of recession or *status quo* in pregnancy; and there is a tendency towards malignant change, hence, the necessity for early recognition and for appropriate treatment." Placenta praevia is the cause of abortions in some cases, and it is more frequently the cause in the latter months.

### Incidence

Abortions are estimated to occur in 20 per cent or more of all pregnancies and the number seems to be increasing—due to the increased number of induced abortions. No doubt it would be safe to state that at least 25 per cent of all pregnancies terminate prior to the viable period. It is estimated that from one-fourth to one-third of all abortions are

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criminally induced. It seems evident that abortions are more frequent than most reports indicate, because many cases are never seen by us. The history of all patients is important, but it is doubtful if there is any other condition encountered by the physician where he can put as little dependence in the history as he can in these cases. The lack of dependence will be illustrated by the following case: N. R., married, came to me for a general examination on November 18, 1927. She had chronic endocervicitis and retroversion. There was a slight enlargement of the uterus, but as she gave a history of menstruating two weeks previously, it was felt that the enlargement was due to congestion resulting from the retroversion. Operation was advised, and she would have been operated upon, except for conditions that arose shortly afterwards, necessitating a postponement. She returned January 16, 1928, complaining of pain in the pelvis, and she had a rather profuse purulent discharge tinged with blood. A bimanual examination was made and a general enlargement of the uterus was found that would correspond to about a 3 months' pregnancy. As the uterus had enlarged, the retroversion had disappeared. She stated she had menstruated every month, though menstruation had been delayed, but that a delay of about a week was usual with her. The condition appeared to be a case of threatened abortion and the patient was so advised. She persisted that she could not be pregnant as she had menstruated every month and that she had not had sexual relations for three months. Despite the patient's positive denial that she could be pregnant, she aborted two days later.

### Therapeutic Abortion

Therapeutic abortion is a procedure that we feel occasionally obliged to perform, but the trend of opinion seems to be—and I believe it is correct—that we should be more cautious than we have been in the past, before we attempt therapeutic abortions. If there is any doubt as to the necessity for the procedure, or if there is any doubt as to the benefits to be derived from the operation, we should not attempt it. No doubt in the years to come we will be more conservative about what we believe is a necessity for this operation, and there will be a smaller number of therapeutic abortions performed. Vomiting of pregnancy is a condition which may occasionally be so severe as to necessitate a therapeutic abortion, but, if we energetically employ all of the measures at our command, we will find it exceptionally rare to have to produce a therapeutic abortion for pernicious vomiting of pregnancy. This also applies to tuberculosis, cardio-renal disease and pelvic tumors. It is not believed that therapeutic abortion should ever be performed for contracted pelves. It is not intended to give the impression that it may not be necessary occasionally to perform therapeutic abortions for the above mentioned conditions, but, at the most, it is exceptionally rare. Of course, hydatiform mole is a condition, when diagnosed, that should call for the immediate emptying of the uterus.

### Diagnosis

The diagnosis of abortion, as a rule, is not difficult, but at times it may be most perplexing. Of course, before diagnosing abortion, it is necessary to determine pregnancy. The principal conditions to be differentiated from abortions are: hydatiform mole, extra-uterine pregnancy, infections of the cervix and endometrium that cause bleeding, and new growths, whether benign or malignant. What is most trying at times is to distinguish between a threatened and an inevitable abortion, and between an incomplete and a complete abortion. It is not uncommon to see cases of threatened abortion, that is, when the patient is flowing and possibly having slight pains in the pelvis, that the symptoms will subside and the case will go on to term. If the patient flows as much as she does during menstruation, abortion is usually considered inevitable. Passage of large clots is usually indicative of inevitable abortion. Flowing is the most important sign and the one on which we can depend the most. Of course, flowing accompanied by pain makes the diagnosis more certain. When the liquor has been discharged or when any part of the membranes or placenta has passed, the diagnosis of abortion is absolute. Even though you are present it is not always easy to say whether it is the liquor that is passing or not, especially if it passes in small amounts.

In threatened abortion cases in the early months of pregnancy, the pain will be more or less continuous, but later in pregnancy the

pains will be more cramp-like and if the uterus extends above the symphysis the contractions can be palpated. It is believed that a majority of all abortions are incomplete. The condition of the cervix will give important information. If the cervix is soft and partially dilated, abortion is inevitable or has already occurred. Thorough preparation of the patient before making a bimanual examination in these cases can not be emphasized too strongly. A cervix that is soft and has remained partially dilated is usually indicative of an incomplete abortion.

If inevitable abortion occurs after the third month, the uterine contractions will often empty the uterus; whereas, if the abortion occurs before the third month, the abortion is very often incomplete. If there is continued bleeding and large clots, there is probably an incomplete abortion. Some advise against a vaginal examination in these cases and make rectal examinations instead, but, if thorough preparation is made, the danger from a vaginal examination is not very great, and the information gained is considerably greater.

### Mortality Rate

In considering the death rate of puerperal women we have to take into consideration the number of deaths from abortions. Practically all deaths from abortions occur in septic cases, hemorrhage very rarely causing death in these patients. The death rate will be influenced greatly by the organism present, the death rate being very high in the streptococcic cases. Williams states that the mortality rate in his streptococcic cases was 28 per cent. Hillis, in his series, states that the mortality rate was 2 per cent for all of his cases. It is evident then, if the death rate is even near 2 per cent in all cases of abortions, that the deaths from this condition are appalling.

### Treatment

A case of threatened abortion should be kept quietly in bed. Either morphia or codein should be given freely. There is still some doubt as to the usefulness of an ice-bag to the lower abdomen in these cases, some claiming that it stimulates uterine contraction, while others claim it has sedative effects. Perhaps the majority prefer the use of an ice-bag. The diet should not be bulky and should consist of simple foods. Purgatives are contra-indicated, but low enemata can be given and they may be helpful. If the symptoms increase to the point of an inevitable abortion, the treatment should be directed along that line, but as long as there is doubt the treatment for threatened abortion should be continued. If the symptoms subside, we should be very slow about getting the patient out of bed, and she should be cautioned against over-activity after she is up. The length of time the patient should remain in bed after her symptoms subside will depend upon the duration of her illness and upon her general condition. If she has flowed for only a day, it is evident that she should not be required to remain in bed as long as if she had flowed for several days. It is probably never safe to let these patients out of bed under five days, and it is usually necessary to keep them in bed at least a week after their symptoms subside.

The treatment of inevitable abortion and of incomplete abortion is still the subject of much controversy. There are some who believe the proper treatment is the immediate emptying of the uterus, while others believe in non-interference except in emergencies. Each case should be treated individually; one case might demand immediate intervention, while another would be suited for only conservative treatment. Infection and the condition of the cervix are two conditions which will help determine the course of treatment. Practically all writers seem to be agreed that interference is contra-indicated in septic cases, but it is important that we should distinguish between sepsis and sapraemia. The infecting organism will have a bearing on both the treatment and the outcome of the case, the condition being more serious in streptococcic infections and, naturally, there is greater demand for non-interference in those cases.

The trend of opinion seems to be towards conservatism in the treatment of abortion, practically all agreeing that sepsis is a contra-indication for active treatment, and many agreeing that, if the cervix is contracted, there should be no instrumentation or manual dilatation.

The conservative treatment seems to be the method of choice in a majority of cases. In fact, it seems that conservative treatment should always be instituted unless there is a

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definite indication for active treatment. The patient should be kept quietly in bed, and in Fowler's position. Morphia and bromides should be given to keep the patient quiet, and the morphia will help to soften the cervix. If the bleeding continues, pituitrin should be given in one-half c.c. doses for three or four doses, as indicated. Some claim pituitrin does not have any effect on the uterus in the early months, but there seems to be no doubt as to its effects after the first few months of pregnancy. Small repeated doses of fluid extract of ergot can be given to keep the uterus contracted in cases of subinvolution. An ice-bag is also useful in these cases.

If abortion is incomplete and it is deemed advisable to institute active treatment, packing seems to be the method of choice in many cases. Thorough preparation of the patient is essential before attempting active treatment. A good view is necessary for packing, and it can be secured with a bivalve speculum and an adequate light. It is not necessary to pack the cervix tightly, but the vagina should be thoroughly packed, especially at the vault, both in front of and posterior to the cervix. The packing should be left in for 24 hours and, if the packing has been thorough enough, pieces of placental tissue will be found on it when it is removed. The cervix will then be found to be more dilated and soft, and, if it should be deemed advisable to empty the uterus immediately, it could be more easily accomplished after packing than it could have been done before. It may occasionally be necessary to repack, but that does not happen often, especially if the packing has been thorough.

If a decision is reached to empty the uterus immediately, it can be accomplished with either the finger or a curet. The finger is best suited, provided the cervix is sufficiently dilated and the finger is of adequate length. If the finger is not suited, a dull curet can be used. Great caution should be employed in using a curet. The curet should be guided as much as possible by the finger and a piece of gauze should be wrapped around the curet as a safeguard. Instead of using a curet, a pair of forceps could be used with the gauze wrapped around them. Placental forceps are also useful for removing loose pieces of placental tissue, but they must be used with care. The use of instruments is safer in the early months of pregnancy than in the late months. We can not be too careful in emptying the uterus in these cases, and gentleness should be our watchword, whether the uterus is emptied manually or otherwise.

Placenta accreta is a rare condition, but if no line of clevage can be found and the hemorrhage cannot be controlled, a hysterectomy should be performed.

The conclusions of Hillis concerning the management of abortions are as follows: "Conservative treatment of abortion in febrile cases gives better results than active therapy. Febrile patients who have a five-day a'ebrile period have a greater tendency to continue a normal temperature after curetting than those who are operated upon before the end of this period. Afebrile patients with a five-day observation period have a greater tendency to remain with a normal temperature than do those who are curetted before the end of the rest period. About 6 per cent of all patients must be emptied because of alarming hemorrhage." The conclusions of Hillis seem to very adequately express the opinion of many concerning the treatment of abortions.

### Report of Cases

Of the 56 cases of abortions coming under my care in which the history could be relied upon, it is fairly certain that at least 12 of them were criminally induced, and it is probable that four additional cases were induced, making a total of 16 cases, or 28.5 per cent, that were probably criminally induced. The average duration of pregnancy when the abortion occurred was two months and five days. Abortion was considered incomplete in 37 cases, or 66 per cent of the total cases. There were 12 cases curetted because of hemorrhage, a dull curet or a dull curet wrapped with gauze being used. Five of those cases were emptied because of rather profuse hemorrhage, and in one of them the uterus was packed. In five cases there was an observation period of four or more days before curettement was performed. In 12 other cases the cervix and vagina were packed, resulting in emptying of the uterus. There were no deaths, but two patients were critically ill for several days following self-induced abortion. I realize you cannot draw definite conclusions from this small series of cases, but the results seem to

point towards conservative treatment unless there is an absolute indication of active treatment.

### Conclusions

1. Most writers seem to be agreed that the conservative treatment of abortions is best suited for a majority of cases.

2. Conservative treatment is the only treatment for septic cases, unless emergencies arise.

3. Excessive hemorrhage or moderate hemorrhage for several days calls for active treatment. Either empty the uterus at once, or pack the uterus and vagina, as indicated.

4. Packing appears to be the most appropriate method of emptying the uterus in a majority of cases.

5. Conservative treatment should always be instituted unless there is a definite indication for active treatment.

6. Gentleness should be our watchword when emptying the uterus, whether it is done manually or otherwise.

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*Medical Arts Building.*

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## TEETH A SOURCE OF FOCAL INFECTION.*

By CHAS. D. TOWNES, D. D. S., Waverly, Va.

Focal infection should be of interest to every physician, since practically every branch of medicine deals with it, directly or indirectly.

The term, oral sepsis, is applied to any unsanitary, pathologic or diseased condition within the mouth and areas adjacent thereto, which may give rise to the liberation of toxins and thereby affect the general health. Teeth, tonsils, mouth, pharynx, larynx, ears, sinuses, and glands may all be sources of oral sepsis.

Oral sepsis is not a new discovery. Its evil effects have been known for many years. The relationship between systemic disturbances and defective teeth can be found in the older literature. Even the ancient Hindus possessed ideas and convictions which are beginning to dawn upon modern civilization, namely, that the gateway through which all nourishment passes, and through which also many germs may enter the system, should be kept pure and clean, in order that the health of the individual may not be impaired.

As showing the prevalence of oral sepsis, Black, in an examination of six thousand radiograms of six hundred mouths, found 78 per cent of the six hundred had one or more apical areas, or an area alongside the tooth. The average age of the patients was thirty-five, all of them being over twenty years old.

Duke, in an investigation of focal infection or chronic sepsis of any variety, found, in a tabulation of one thousand medical cases in general practice, 66 per cent oral sepsis, and in the other 34 per cent either none was found or the amount was so slight he did not think it had any bearing from the standpoint of systemic illness.

Extensive bacteriologic investigations at the Mayo Clinic and elsewhere have demonstrated that even pulpless teeth which show little or no evidence of infection from the radiogram standpoint are usually infected. The percentage is so high that all pulpless teeth must be considered potential foci of infection, and should be extracted if the condition of the patient requires the elimination of all dental infection.

I believe that the safety of pulpless teeth depends on the patients defense, rather than on the ability of the dentist to keep them safe. Many physicians and dentists have long advocated giving more attention to the teeth and mouth as sources of disease, and have endeavored to show the results obtained by following this method of elimination in individual cases by case history. The X-ray and modern means of diagnosis have served to prove the foundation for these ideas. Many teeth, however, that may be factors in making a diagnosis may be overlooked unless full mouth radiograms are made, which reveal the exact condition.

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No matter how careful the operator may be, there are times when he will be mistaken unless the entire mouth is radiographed. To my mind, there is every advantage in doing this, for the pictures serve as a record, relieve the operator of any uncertainty, and ultimately save time.

There is no single factor which will give so much valuable information, or which may be so deceptive as the radiogram. Radiogram does not show infection, but the results of infection, injury, and pathologic changes. Many people have great imaginations and profess their ability to see conditions in radiograms which are not apparent to others. The ideal use of the radiogram for dental purposes requires that it be produced by those who are familiar with the requirements of dental diagnosis, who understand correct angulation to bring out the suspicious area, and have sufficient technical training to produce finished pictures which will show all details clearly, understand what it really shows, and know its defects and limitations. This use requires also a knowledge of dentistry adequate for proper interpretation when considered with the clinical findings. The general appearance of the mouth, the articulation, the age of the patient and the use to which the teeth have been subjected are all important factors in the determination of the necessary procedure.

At the Mayo Clinic a chart is made of the entire mouth, noting those teeth which should be extracted for local reasons, and the questionable teeth, which may be retained if the systemic condition of the patient permits.

There are several types of teeth infection which have a bearing upon systemic disturbance, namely, periapical abscess, infection of the dental pulp, peridontal diseases, and impacted and unerupted teeth. The most poisonous of these is the periapical, for the reason that the inflammation is located in the bone, which does not possess a good blood supply, and there is no means of expansion when inflamed on account of the dense surrounding tissues.

Chronic periapical abscesses do not, as a rule, give rise to a single uncomfortable feeling, and easily escape the attention of the patient and physician. It is only when the condition becomes acute and where there is a liberation of toxins and formation of pus in excess of the amount capable of being carried off by the channels of elimination that symptoms of pain occur. In this type of infection it has been my experience to find the trouble in some area entirely unsuspected by the patient.

A periapical infection may spread to adjoining teeth or may exist chronically over a long period and degenerate into a cystic condition involving a number of teeth. Periapical infection has no regard for age; it may be found from childhood to old age. In a series of four hundred and ninety-eight cases of chronic arthritis, Moorhead found radiographic evidence of periapical infection in 89 per cent.

The next type of infection is the dental pulp. An infection in the root canal may persist at the apex of the tooth for years, when there is open drainage, without noticeable disturbance, but just as soon as a filling is inserted, the canal plugged, or the fistula closed, definite and marked systemic disturbance then appears. Infection from an open drainage is less apt to gain entrance into the blood or lymph streams.

The third type is peridontal diseases, which is a disturbance of the peridontal tissue. It includes all diseases of the tissue surrounding the tooth root which have their origin in the gingivae, peridontal membrane and gums. The term pyorrhea is quite widely used in speaking of these conditions. The disease is characterized in the early stages by pocket formation; alveolar absorption occurs, the tooth becomes somewhat loose, and pus can usually be pressed out of the pocket. The disease gives but little trouble in the early stages. In determining the procedure, too much dependence should not be given to the radiographic examination, as only bone conditions are shown, and the tissues play an important part. I advise the extraction when the bone absorption extends more than half the length of the root of the tooth.

The last type that I will mention that act as foci of infection are the impacted and unerupted teeth. The most common impactions are the lower third molars, upper third molars, and the cuspid teeth. They may be found anywhere in the mandible, even to its inferior borders, or in the ramus, and anywhere in the maxillae, including the nasal and maxillary sinuses.

Many systemic disturbances are due to infection in the surrounding tissue of the impaction. It is often difficult to make a decision whether an impaction is the possible cause of systemic

disturbance, where there is no manifestation and the radiogram does not show the result of infection. Every other factor should be ruled out before a decision is made to remove, as there is no certainty of the result to be achieved. I have observed favorable results in cases where the examination showed no indication of disturbance, and the removal of the tooth relieved immediately eye, ear, and general disturbance which had existed for long periods and had failed to respond to all other treatment. On the other hand, I have seen cases where the disturbance was blamed upon the impaction, and the condition did not improve upon the removal of the tooth. In cases where definite infection is shown to exist by radiogram or clinical evidence, the results after removal have invariably been good.

Infection from oral sepsis occurs as follows: by direct invasion of the adjacent tissues, by passage along the mucous surface of the alimentary tract, and through the blood and lymph channels, causing secondary foci in distant organs and parts of the body. The germs and toxins may be carried directly by the saliva to the tonsils, pharynx, eustachian tubes and alimentary canal, causing secondary irritation and absorption, giving rise to secondary foci.

Expectant mothers should be free from dental focal infection, both for their own safety and efficiency and for the continued vitality of the fetus. Many cases have been cited tending to show that the fetus has been prematurely expelled or rendered lifeless by mouth infection. Oral sepsis may affect a nursing baby by toxins from the mother.

Since it has been clearly proved that infected teeth may be the cause of systemic disturbance, it becomes necessary to be able to effect a positive cure or remove them. In brief, the dentist's responsibility in regard to focal infection is to find, prevent and eliminate conditions in and around teeth which may act as foci. There is no set rule for dentists to follow in this work, as the question of removal reverts back to the personal skill of the operator and his ability to treat successfully, and to the condition of the patient.

When the health of the patient is impaired, it would appear wise to remove all periapically infected teeth and those having marked peridontal disease, or those which will not respond immediately and without question to treatment.

In determining when to extract teeth, it is necessary to take into consideration many factors. Each case should be handled as good judgment and experience indicate. With very few exceptions, my practice is to recommend extractions of all teeth showing evidence of periapical bond involvement, all pulpless-teeth in patients whose health is seriously endangered, all teeth showing marked peridontal bone absorption, all pulpless teeth directly bordering on the maxillary sinus, all third molars when pulpless, all pulpless teeth when the root formation precludes the possibility of a good root filling, and all pulpless deciduous teeth.

The removal of teeth should receive serious consideration, as the consequences may prove serious or fatal. The surgical shock and opening of new tissue areas for the pathogenic bacteria often cause marked systemic disturbance. Where the resistance of the patient is low or impaired, it would appear best to remove all possible foci of infection, and thereby at least reduce the overload, but it is best to remove not more than one-fourth of the teeth at one time and to wait at least four days between sittings.

We often hear of cases where there has been no improvement as a result of elimination of infected teeth. In these cases we must bear in mind that when the source of a focal infection is eliminated, it does not always mean there will be immediate improvement of general condition, as it is necessary to give consideration to secondary effects of the primary focus. Since the progress of focal infection is usually so insidious and extensive, pathologic changes are often produced before the primary focus is discovered, and in chronic cases of long standing there may be injury beyond repair.

Organisms after gaining entrance into the general system acquire a new field of activity, and produce pathologic changes favorable to their own sustenance, and protect themselves against attack. This is especially true in arthritis, where the inflammatory action may continue long after the primary focus is removed. The simple removal, therefore, is not always sufficient to effect a cure without additional medical assistance.

The following significant facts should not

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be overlooked: conditions improve in a large majority of cases after thorough removal of foci. Upon surgical access to pathologic area, conditions prove to be as bad, as shown by careful radiographic examination. All these pathologic conditions are progressive. Sooner or later these conditions become acute. The blood picture usually shows improvement after removal of infections. When characteristic septic temperature is present, there is usually a drop to normal after elimination of infection.

The removal of dental infection, either surgically or by other means, to correct a systemic condition, has often been a failure, not because of the dentist's work, but because infection elsewhere in the body was not found and eliminated. It should be borne in mind that infection in and around teeth is only one link in the chain, and it is unfair to the patient to extract teeth which lack sufficient evidence of trouble to warrant their removal unless the dentist has knowledge that other points of infection have been eliminated. In other words, a tooth which is not a local menace should be left as a last resort. Such action, therefore, hinges on direct co-operation between the dentist and physician. Since physicians and dentists have developed better ways and means of making diagnoses, patients suffering with systemic disorders traceable to foci of infection have been better cared for; for example, better results are being obtained in the treatment of infectious arthritis since the prostate has been included as a source of infection. To emphasize this point, the following case is reported from the Mayo Clinic, 1927:

Patient admitted to the clinic suffering from sciatica. Tonsils and prostate were found to be infected, and dental examination revealed that the two lower first molars were pulpless, but radiogram showed negative. The patient's dentist strongly advised against removal of these teeth, because he believed these teeth could not possibly be a source of infection unless X-ray revealed so-called radiolucent area. The patient gave his permission to have one of the teeth removed. The tooth was cultered and a streptococcus infection found. At this time the prostate was undergoing treatment, but marked improvement was not noticed until after extraction of the other tooth. The patient was then more at ease than he had been for six years.

If the prostate had been overlooked and merely the two teeth and tonsils removed, the patient would not have been permanently cured. Again, it would have been unfair to have extracted teeth which were giving him service from the standpoint of mastication without elimination of the other two sources of infection.

Such examples emphasize the fact that the extraction of teeth alone often fails to bring about systemic improvement, and not only is disappointing to the patient, but tends to lessen interest of the professions in focal infection. Moreover, it is regrettable that patients are sometimes assured of relief through removal of foci of infection when it is far too late, a point emphasized by Bumpus, who says, "Septic teeth and tonsils are removed too often, with the assurance of benefit to the patient, after the heart has begun to beat irregularly, after albumin or pus has appeared in the urine, or after the joint has become deformed. Strange as it may seem, the idea that normal function can be restored to an injured kidney, a deformed joint, or leaking heart valve, by removing foci that initiated the disease years before, is apparently the most common misapprehension regarding focal infections."

I would like to quote the history of a patient suffering facial paralysis: Mr. B., aged forty-five, had paralysis of the right side for two years without complete relief. Infected teeth were present all during this period. The left side became paralyzed also, and he decided to have five teeth showing periapical infection removed. Improvement was prompt, and two months after removal of the infected teeth both sides of face were well.

Another case, reported by Mead, was a young man, twenty-four years old, previously healthy, who was running a typical lung temperature, having night sweats, with loss of weight and cough. Radiogram showed two periapical abscesses draining into the sinus. After the removal of the two teeth, all the above mentioned symptoms disappeared and the patient has remained well for six years.

I wish to emphasize the need for a closer co-operation of the dental and medical professions in handling properly the problem of the effects of oral sepsis upon the general health of the patient.

On the one hand, the medical profession

should not overlook the value and advantages of nature's own teeth, and should remember that no artificial restoration can really equal the tooth which was extracted. No attempt, therefore, should be made to sacrifice teeth without due regard to their usefulness and a positive assurance that they are causing general disturbance. This decision should be left to members of the dental profession.

On the other hand, it has been my observation that many physicians who fully believe in the teeth as a source of general disturbance are often handicapped in their efforts to eliminate oral sepsis by the hostile attitude of members of the dental profession who have contrary opinions.

When the general health of the patient is at stake, and it is the opinion of the attending physician that the condition of the mouth is the cause, or if he has even a suspicion to this effect, it should be the duty of any member of the dental profession to whom the patient is entrusted to be absolutely sure of his grounds before expressing a contrary opinion, and he should do this only after a most careful and painstaking examination.

The dental profession should more fully appreciate the position of the physician's interest in the welfare of the patient and understand more fully the evil effects of focal infection as a factor in systemic disturbance.

## TREATMENT OF ECLAMPSIA AND ALLIED CONDITIONS.*

By PERCY HARRIS, M. D., Scottsville, Va.

The treatment of eclampsia is always difficult, due to the fact that so much is still to be learned about its etiology, and because such varied results in the treatment are obtained at the hands of the best obstetricians.

For the purposes of study it seems best to divide the treatment into three stages:

*First.*—The treatment of toxemias which early bring about the nausea of pregnancy, are seen most frequently in the first three months, and which may develop into hyperemesis gravidarum.

*Second.*—Treatment in late pregnancy, sometimes called the pre-eclamptic stage, seen about the fifth to seventh month, which, if uncontrolled, may become eclamptic.

*Third.*—Treatment in eclampsia or convulsions attended by coma, seen most frequently from the seventh to the ninth month (patient may be in labor or not, or following labor). This is one of the most dangerous complications that may befall the pregnant woman.

First, or Prophylactic Stage.—The most important thing for the patient to do is to put herself in the care of her physician at the disappearance of her first menstrual period, and this instruction should be given girls in the schools as soon as they reach the age of fifteen years. Pain and nausea are the two things that make pregnant women present themselves for examination; otherwise they are absolutely ignorant of their condition. It is in this first stage that your greatest work is done. At this examination the patient is thoroughly gone over. Blood pressure is taken, urinalysis, proper care of genitals ordered, pelvic measurements made, teeth, tonsils and eyes examined, and all focal infections excluded and given what treatment is necessary. Heart and lungs are examined, also blood test is made, the Wassermann being most important. Basic metabolism is very important. Caution patient to keep skin active, to avoid constipation, to indulge in moderate exercise, avoid alcohol and smoking. Prevent acute infections as far as possible; avoid getting chilled, as weather conditions may play some part in eclampsia. Give most explicit directions in regard to diet and avoid obesity.

Family history is important. Get history of epilepsy, syphilis, illnesses, and what surgical operations she has had. She may have had a nephrectomy. Twins endanger pregnancy. Nausea and vomiting are the symptoms which make the patient most likely to present herself for treatment, and these may have gone so far that hyperemesis gravidarum is the case. This is the most common of the toxemias of pregnancy, and is frequently seen in the young and robust girl with the first pregnancy. These cases have two main causes: first, hypofunction of the luteum of the ovaries, and, second, a manifestation of protein sensitization or anaphylaxis, the more common and important, which results from the waste products eliminated through the placenta.

The extent of this toxemia naturally depends upon the degree of efficiency of the detoxicating mechanism, especially the adrenals, liver and thyroids. Here try out your gland treatment, stimulate the liver, and abort the patient, if necessary, where vomiting is per-

*Read at a meeting of the Albemarle County Medical Society, February, 1928.

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sistent in the early stages of pregnancy. I fear some serious toxemia later on and try to impress this on my patients. Out of approximately two thousand obstetrical cases, of which I have had the care from the beginning of pregnancy, I have lost only one, and this was one of the types that I have just mentioned. Diet plays an important part in preventing this terrible complication, by maintaining a metabolic equilibrium. A salt free diet should be carried out, while proteins and fats should be used sparingly. Can you expect anything else than toxemia in a pregnant woman who lives exclusively on meat, bread, potatoes and beans, with coffee, and in some cases alcohol added? All of these should be strictly forbidden. The diet should be so ordered that just enough nitrogenous matter is given to sustain life, in the form most easily assimilated, and which will be the least tax on the liver and kidneys. Always keep the liver and kidneys active. Prevent constipation, exercise moderately, keep skin active, drink plenty of light mineral water, diet carefully, as previously pointed out, and the second and third stages of eclampsia will not be reached;—in fact, some authorities go so far as to say that the occurrence of eclampsia in a pregnant woman, supposedly under supervision, means that some one has blundered. Whether this be true or not, it must be admitted that the fulminating type of the disease is extremely rare, and with proper observation and proper interpretation of the prodromal symptoms, which are almost invariably present, 95 per cent of the cases can be prevented. The etiology of the disease may be unknown, but its deadly results are not, and the part of wisdom is to prevent it before it ever occurs. Environment also plays a large part.

Second Stage.—This stage is one that you rarely ever see if the prophylactic treatment has been carried out according to orders, and the patient reports at regular and stated intervals for office examination of blood pressure, urinalysis, etc. I instruct my patients to notify me at once whenever they suffer from headache, dizziness, disturbance of vision, epigastric pain, or edema. Patients with all of these symptoms, and some quite aggravated, with high blood pressure and urine loaded with albumen, convince me that eclampsia is about to make itself manifest. I immediately put them to bed on a milk diet, watch them daily, taking blood pressure and making urinalyses, and give magnesium sulphate daily in ounce doses, by mouth, in some cases. Also, if the blood pressure is around 200 m.m. systolic, I give nitroglycerin, gr. 1/100, every four hours in connection with the preceding treatment. I have used sparteine sulphate, grs. ½, in some cases. I use sodium bromide and occasionally chloral hydrate for the nervousness. If these symptoms do not disappear in four or five days, and they continue to get worse regardless of treatment, I immediately start up labor.

Third Stage.—Now, if, in spite of all of your precautions, eclampsia does occur, what treatment is best to pursue? This depends upon whether the case is in an isolated spot, miles away from everybody, assistance unable to be gotten, or in a comfortable home nearby, or whether or not the patient can be gotten to a hospital. Of course a hospital is to be preferred. Think quickly; do not tire or give up, and keep the confidence of the whole family, if possible. If you are successful, do not be too much puffed up, for the result in the next case may take the wind out of your sails. Then your course of treatment is directed a great deal according to the patient, whether she is a primipara or not, and the number of convulsions, also the cervical dilatation, the size and condition of the baby. Twins also complicate matters. In quite a number of eclamptic cases that I have attended twins were delivered.

*Conservative treatment* of eclampsia offers the best results. Early delivery gives the child a better chance for life, but this cannot always be done. If Cesarean section is the method of rapid delivery chosen, naturally children will be spared and convulsions cease or become less severe after the uterus is emptied. Injury to the genitals will be spared. In cases where the pregnancy is not advanced, try and keep the convulsions under control and let the pregnancy continue. Forcible methods of delivery increase the dangers of infection to the mother, rupture of uterus and hemorrhage, and a large proportion of the babies succumb.

If the convulsions and labor pains are extremely violent and frequent, blood pressure high, coma and cyanosis deep, the uterus should be emptied as soon as possible, if it can be done with safety to the mother.

Under similar conditions without labor pains, *be most guarded* in the use of pituitrin, if at

all, using it only in the third stage. Make patient as comfortable as possible. Try to prevent a half dozen old grannies and all the relations from coming in the room. A good nurse is very essential. Make bed comfortable. Elevate foot of bed. Patient must be on side and edge of bed in order that the vomit and fluid can escape from mouth and not be aspirated in the lungs. I always caution my nurses to prevent the patient from biting her tongue. To do this, I use a wrapped clothes pin, a piece of rubber, or a piece of inner tube. Hot packs and ice-cap are also ordered. One of the next things I do is to give morphine sulphate, gr. ½ hypodermically, and repeat the dose in an hour, if necessary (if the convulsions have not subsided any); otherwise, I repeat in three or four hours as the convulsions may require.

At this point, I scrub up the patient, make a vaginal examination, then catheterize and order a soap-suds enema, several of them, if necessary. Now, if there is enough dilatation of the cervix to apply forceps, I deliver the baby very slowly, trying to prevent all the damage possible. If the convulsions are continuing and dilatation slight, blood pressure over 170 m.m. systolic, I do a venesection and usually draw off about 500 c.c. of blood, and, in the other arm, I give magnesium sulphate intravenously, 20 c.c. 10 per cent solution, and repeat every two hours, if indicated. Magnesium sulphate decreases the intracranial pressure by relieving the cerebral edema; it stimulates diuresis, aids in diminution of general edema, and convulsions generally subside. Sometimes I use 500 c.c. of a 5 per cent solution of glucose, more if indicated.

With the preceding conditions existing, I start my dilatation with a Voorhees' bag, and as soon as I can get dilatation enough (and it is terribly slow dilating when you are waiting and worrying too), I proceed as before with instrumental delivery.

I am forced to use chloroform for an anesthetic occasionally, even though it is contra-indicated, on account of the inflammability of ether and the inability to carry gas around with me. Where the coma is very profound, no anesthetic is neccessary.

Lumbar puncture is sometimes required. In some instances I wash the stomach out with soda water, and, before withdrawing the tube, put in an ounce solution of magnesium sulphate. If the pulse is very weak and I fear cardiac failure with edema of the lungs, I give digitalis. Convulsions continuing after delivery and treatment are most serious.

All eclamptic patients should be looked after for months after delivery. They should be warned of the dangers of another pregnancy right away, though they seem rendered immune to future eclamptic seizures. Make urinalyses, blood and metabolism tests frequently. High blood pressure may be due to hyperthyroidism and syphilis, and not to the toxemia of pregnancy. I have just had a case of each with eclampsia, and am happy to say that both are doing well under treatment.

High mortality in eclamptic women is not due to the physician, but to the ignorance of the patients in caring for themselves before and after delivery.

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## A DISCUSSION OF SOME OF THE COMMONER TYPES OF INFANTILE DIARRHOEA, AND THE PRINCIPLES UNDERLYING THE DIETS USED IN THEIR TREATMENT.*

By BASIL B. JONES, M. D., Richmond, Va.

The gastro-intestinal tract, from both anatomic and physiologic considerations, may be divided into several different segments. The esophagus is essentially a transporting tube to convey the food from the mouth to the stomach. The stomach, with its two sphincters, is the first repository. Here the food is churned by the contractions of various muscular layers and is thoroughly mixed with the digestive juices, first from the salivary glands and later from the secretory glands of the stomach itself.

The gastric juice, which normally contains hydrochloric acid, pepsin, and rennet, and probably a little lipase, produces a definite though incomplete digestion of protein and to a slight extent probably of fat. Normally, the food, after being partly digested, is squirted through the pylorus in small amounts by the peristaltic contractions of the stomach. In the duodenum the acid chyme is not only subjected to the alkaline digestive juices from the pancreas, liver and small intestine, but plays at least a dual role in physiology. First, it stimulates the production or activates the hormone called secretin, and so whips up the secretory glands in the vicinity. Second, it in some way

*Read by invitation before the Southside Virginia Medical Association at its meeting in Richmond, June, 1928.

seems to favor or induce pyloric closure until its acidity has been neutralized. The small intestine from the jejunum onward is primarily absorptive in function. The substances chiefly absorbed are the end products of protein, fat, and carbohydrate digestion. The material in the small intestine moves right along, being gradually absorbed as it moves, and is next pushed through another sphincter-like area, the ileocecal valve, into the large intestine. Here water and salts are absorbed and probably the final products of enzyme and bacterial digestion. In the large intestine the material concentrated, as indicated above, is gradually pushed around to the rectum and from thence through the anus.

The movements of the gastro-intestinal tract are influenced not only by the nature and amounts of the material within its lumen, but also by reflex stimuli originating outside the canal and by hormones and other substances which exert either a stimulating or depressing effect on the motor nerves. The same factors which influence the movements of the gastro-intestinal tract, either directly or indirectly, affect the secretory activity of the various glands which supply the various digestive juices.

Minor disturbances, in the majority of instances, are probably compensated by a certain inherent elasticity or reserve, and so do not create alarming or even noticeable symptoms. Disturbances of a more serious nature will result in symptoms of varying intensity, and also of varying type according to the nature of the disturbance. To the discerning eye the symptoms should reveal the nature of the disturbing factor and so indicate the procedures necessary to combat it.

In the great majority of instances where vomiting and diarrhoea are the outstanding symptoms, one of three types of disturbing factors will be found playing the etiologic role: first, irritating substances ingested; second, irritating substances produced in the stomach and intestines as the result primarily of inadequate digestion and absorption, and secondarily to irritating substances resulting from the rapid growth of bacteria in the unabsorbed residue; third, actual infection of the wall of the intestine with the irritation which goes along with it.

Where the disturbing factor is some irritating substance ingested, the history and the nature of the vomitus and bowel discharges often will indicate the offending substance. Generally when the offending substance is some spoiled food, several members of the family will be affected simultaneously. Ordinarily the temperature is not elevated. This type of disturbance is best controlled by elimination, which nature can generally accomplish adequately without assistance, and by rest to the gastro-intestinal tract until the irritation has subsided. Water, orange-ade, or some dilute fruit juice or weak tea will adequately meet the needs until the appetite returns. When the patient is hungry again and if the symptoms have subsided, the usual diet can be resumed in amounts indicated by the appetite. The transient nature of this type of upset is more or less diagnostic. When symptoms continue longer than a day or so, the chances are that the cause of the disturbance was something else than the food which originally was blamed.

The second type of disturbance mentioned above includes a heterogeneous group with symptoms of varying intensity, which really should be classified further in accordance with etiology or clinical manifestations. Because clinical experience seems to warrant, I am going to discuss this type under two headings, fermentative diarrhoea, and cholera infantum.

Fermentative diarrhoea is distinguished clinically by the occurrence of numerous loose stools; usually green in color, which contain mucus and only partly digested food, and which are acid in reaction. This type of stool usually irritates the skin about the diaper area, and often renders this area quite raw. Vomiting usually is not an outstanding feature, and the temperature often is only slightly elevated.

The type designated cholera infantum may start with loose greenish stools which are acid in reaction at first, but soon lose the characteristics of the fermentative type and become alkaline or neutral in reaction. The stool typically is watery, contains little or no mucus, is generally of a yellowish brown color, and often is passed with considerable gas. Vomiting is a striking feature of this type of disturbance and the vomitus often is brown streaked. Water is rapidly drained from the body and in a few hours dehydration may become severe. The eyes and fontanelle sink, the skin is often cold and of a dull gray

color; it has also a doughy feel and very little elasticity. The temperature, which may be only slightly elevated at first, usually begins to rise as the dehydration progresses and often is quite high shortly before the death of the patient. Infants suffering with this type of diarrhoea often will recover if treated properly before extreme dehydration and acidosis occur, but if treatment is delayed or improperly conducted, death usually will result.

The etiology of these two types of diarrhoea has not been definitely determined, but there is a growing impression among pediatricians that parenteral infections are actively concerned. External heat and high humidity, especially when the infant is too heavily dressed, seem often to be causative or accessory factors. My own view is that parenteral infections, especially infections of the naso-pharynx and middle ears, are primarily responsible. The mechanism probably is somewhat as follows: The toxins absorbed from the infection interfere in some way with the normal emptying time of the stomach and also cut down the secretion of gastric juice. Often the toxins act to produce vomiting, and at other times vomiting may result from the prolonged retention of only slightly digested food in the stomach, which produces discomfort and nausea. Local irritation in the pharynx, acting reflexly, may well be a factor in causing vomiting in some cases. Due both to the effect of the toxins and to the diminished amount of gastric acidity, the digestive juices from the liver, pancreas, and small intestine also are diminished. Consequently, food which enters the intestine cannot be properly digested. Another effect of the lowered acidity is the failure to kill the bacteria in the food and saliva. This combination of circumstances permits a rapid growth of bacteria even in the small intestine, which under normal conditions is almost sterile. The bacterial growth produces an excess of irritating fatty acids and probably other toxic and irritating substances which stimulate rapid peristaltic movements of the intestine. It may be well to state here that the most irritating fatty acids result from bacterial growth in carbohydrate material.

Since we are dealing with individuals of varying ages, varying digestive capacities, and varying degrees of illness, our aim should be to fit our treatment to the needs of the patient, and not to some suggested formula.

Breast fed infants rarely have severe types of diarrhoea. They do, however, show evidence of milder fermentative diarrhoea rather often. In this type of patient, our plan of treatment should be to diminish the amount of breast milk taken by the infant or possibly to alter the diet by the addition of cow's milk protein. We can cut down the amount of food by giving the baby boiled water before the feeding, or by removing the infant from the breast before he has eaten as much as usual. Generally this plan of treatment will be adequate so far as diet is concerned. If the addition of cow's milk protein seems indicated, we can use a solution of casec or some similar preparation, or a proper dilution of powdered protein or albumin milk. Since the infant probably will not take any of these preparations readily, it is advisable to give the modified cow's milk before putting the child to the breast. Rarely is it advisable to remove the child from the breast entirely.

When the bottle fed infant develops diarrhoea, our problem is somewhat more complex. The chances are that the bottle fed infant will have less resistance than the breast fed infant. Certainly the preparation of a suitable diet for the bottle fed infant is more difficult than the proper alteration of the diet of the breast fed infant. When we prescribe a formula for an ill infant, especially for an infant suffering from diarrhoea, we have to remember the lowered digestive capacity, the tendency to fermentation when excessive amounts of undigested and unabsorbed food remain in the intestine, and the fact that carbohydrates are the materials which ferment. We also must remember that protein tends to the production of alkaline feces, and that when protein is excessive in the diet it seems to inhibit more or less the carbohydrate fermentation. Simply boiling cow's milk renders it much more digestible than raw milk. Removing some or all of the cream cuts down the production of fatty acids and at the same time takes off some of the load from the overtaxed and poorly functioning digestive glands. The addition of some organic acid, such as lactic or citric, to the boiled cow's milk eliminates the action of the buffer salts which are about three times more plentiful in cow's milk

than in human milk, and so spares the hydrochloric acid of the gastric juice for the performance of its important rôle in digestion. Milk soured by some known strain of lactic acid producing bacteria may be used or the acids mentioned above may be added to the milk after it has been boiled and cooled, in amounts varying from one to four drops of lactic, or four to twelve drops of citric acid in the form of lemon juice, to each ounce of milk. For the more severe types of fermentative diarrhoea, the protein milk prepared according to Finkelstein's formula often is quite helpful. This preparation has a lower amount of fat and carbohydrate and a relatively higher amount of protein than straight cow's milk. In addition, it is acid in reaction, and the curd has been broken up mechanically. Several powdered protein milk preparations are now on the market, which can easily be prepared by the addition of water.

The important principles to bear in mind in prescribing diets for infants suffering from fermentative diarrhoea are as follows: Start off with small amounts of food which can be digested by the poorly functioning gastro-intestinal tract. Prescribe a formula which will starve the fermentative bacteria which thrive in carbohydrate media, and which by its relatively high protein content will tend to the production of alkaline stools. Be sure that the causative process and its resulting functional derangement of digestion have subsided before resuming the diet normal for the infant. Starvation and especially dehydration must be avoided. An abrupt change from the anti-diarrhoeal formula to the normal feeding is liable to cause a return of symptoms and so should be avoided.

Cholera infantum is a much more severe and fatal disease than fermentative diarrhoea. The etiology and the mechanism which produce this violent derangement of the gastro-intestinal tract are not absolutely known. Many cases presenting characteristic symptoms have been reported in children who had more or less obscure infections in the middle ears and mastoids. Some of these cases have improved when the local infection was given adequate treatment. The probability is that some specific organism or closely related group of organisms, growing and producing their toxins in some parenteral focus, will eventually be incriminated. Whatever the cause, the resulting derangement of digestion is terrific. Water literally drains from the blood vessels into the lumen of the intestine. Basic salts and chlorides also are lost by way of the intestine, and in consequence the stools lose their acidity and may become alkaline. Profound changes occur in the various organs and tissues of the body as the result of dehydration and acidosis. Food of any sort for the first twenty-four hours will do more harm than good. The real problem is to slow up the loss of water and salts and to replace that which has been lost. Of course, the focus of infection, if such exists, should be sought and treated if possible. Because of the vomiting and diarrhoea, water often cannot be given by mouth or by bowel, and so must be given intraperitoneally or subcutaneously in the form of normal salt solution, or Ringer's solution. Only water, dilute orange juice or weak tea should be given by mouth at first. After the first day or so, skimmed lactic acid milk, preferably one of the dried preparations, may be tried in small amounts. This type of food, with the subsequent addition of a little glucose or dextri-maltose should gradually be increased if the symptoms warrant. It is easy to bring back the original symptoms if too much food is given too soon, especially if sweet milk is used. The resumption of a normal diet must be accomplished very slowly even after the infant is apparently over the disease because of the slow recovery of normal digestive capacity.

Diarrhoea which results from infection of the wall of the intestine is generally due to one of the types of dysentery bacilli. Amoebic dysentery is rarely encountered in our infant population, and so will not be considered in this discussion. Bacillary dysentery is a specific infection located in the walls of the lower small intestine and generally throughout the large intestine. The pathology varies from a catarrhal inflammation to actual ulceration. Irritant toxins are produced which call forth mucus, pus, and blood from the affected intestinal wall. Due to the irritant effect of the bacterial invasion, peristalsis, especially that of the large intestine, becomes very active. Fermentation of food residue probably plays a minor role in this disease. Some writers even urge the use of carbohydrate food with the idea of favoring the growth of lactic acid

producing bacteria because dysentery bacilli produce more toxic material in an alkaline medium. Any increase of peristaltic activity which might result from such a diet probaby would be negligible. Proper drainage of the toxic discharges is essential and must not be prevented by medication or diet regulation beyond the point of moderate relief of tenesmus.

Due to the toxemia and resulting fever, the appetite is poor and the capacity of the stomach and upper small intestine to digest food is impaired. These considerations should be borne in mind while ordering the diet. Sweet milk cannot be properly digested and often appears to aggravate the symptoms. Buttermilk, prepared from some known strain of lactic acid producing bacteria, is the best milk preparation to use. It has the fourfold advantage of low fat, mechanically broken up protein, acid reaction, and viable lactic acid producing organisms. Carbohydrates, in the form of dextri-maltose, well cooked cereals or rice, usually can be handled without trouble. Orange and lemon-ade help supply food and fluid and should be used freely, even in the treatment of small infants. The idea prompting the use of the foods mentioned above is to give the patient food which can be digested easily, which will be largely absorbed, and which will leave only a small amount of residue to be handled by the infected large intestine. The nutritional value of these foods is good and their ingestion should help the patient to fight the infection.

The assumption of the regular diet should not be attempted until the symptoms of active infection have disappeared, and even then should be made rather gradually.

In concluding this discussion, it probably is well to reiterate that most gastro-intestinal disturbances in infancy and early childhood are due to infection. In the majority of instances the infection is located primarily in the naso-pharyngeal area. From the infected process toxins are absorbed and bacteria are swallowed. Derangement of the physiology of the gastro-intestinal tract results, and this derangement is shown in both the motor and secretory activities. Ability to digest and absorb food is impaired, as well as power to kill ingested bacteria. This combination of circumstances permits rapid bacterial growth, even in the upper part of the small intestine, which ordinarily is almost sterile, and probably explains the diarrhoea.

In a smaller number of cases the wall of the intestine is invaded by bacteria, generally by some type of dysentery bacilli, and characteristic symptoms result.

Proper treatment depends not only on the recognition of the seat of the infection, but also on the recognition of the derangement of function and the knowledge of the procedures best adapted to combat the morbid process. Chief among these procedures are maintenance of adequate fluid intake, and the preparation of a diet which will both nourish the patient and combat the offending bacteria in the intestines. General principles underlying the preparation of the diets for several different types of diarrhoea have been given. Stress also has been laid on the danger of changing too soon from the anti-diarrhoeal type of diet to the diet normally taken by the infant.

2620 *Grove Avenue.*

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## PRELIMINARY REPORT IN TREATMENT OF NEURO-SYPHILIS.

By JOS. T. N. McCASTOR, B. S., M. D., and MARY COUSINS McCASTOR, B. S., Thomas, W. Va.

The problem of neuro-syphilis is shared by the general practitioner as well as the specialist. Indeed, one authority has said, "late syphilis of the nervous system is the business and responsibility of the general practitioner. While certain aspects of its diagnosis and treatment may demand the help of a specialist, its earliest detection and its effective treatment by an intensive therapy must be in the hands of the patient's home physician. If he will perform his whole duty by the first two or three years there will be a reduction of 5/6 in the incidence of consequences in the nervous system."

The nervous system is attacked early. We certainly see it within the first and second years in many cases. In other words, the nervous system is early more or less involved. Whether it be due to refinement in diagnosis or the truth of the theory that the spirochaete is adapting himself to modern treatment, statistics record the increase of neuro-syphilis. The Central State Hospital records show approximately 33 per cent of admittances from July 1, 1927, to January 1, 1928, have syphilis

*From Department of Special Work, Central State Hospital, Petersburg, Va. Work done when Dr. McCastor was connected with staff of hospital.

Luetin by courtesy of Lederle.

Coley's Fluid by courtesy of Parke, Davis Co.

and 20 per cent general paralysis. Heckt, of New York, states he has seen cerebro-spinal lues showing positive serology six weeks after appearance of chancre.

At present malarial therapy is in the forefront of the therapeutic armamentarium. Cases of neuro-syphilis which have been refractory to any other treatment are benefited. In the original group of Von Jauregg, in 1917, consisting of nine paretics, six were benefited. He followed this with a series of two hundred cases with a result that fifty improved to a complete remission. Gerstmann reports one hundred and twelve remissions out of two hundred and ninety-four cases. Nonne's clinic reports 50 per cent remissions. Kirby had thirty-seven cases improved out of his group of one hundred and six. And so the thread of optimism runs throughout the reports of malarial therapy. Yet no satisfactory theoretical explanation has been offered as to how malaria acts in the paretic. Mueller offers a theory that changes of the vessel tonus occur in various parts of the body—vaso-dilatation leading to local hyperemia, and transudation into the neighboring tissue is alleged to bring about migration of leucocytes along with the serum. The blood pressure falls and the general leucocyte count is lowered in the peripheral blood stream while the abdominal vessels are dilated. Soon this is overcome by the vaso-constrictors which are well functioning in a healthy tissue, but in the affected brain this condition comes on very slowly, hyperemia is prolonged, thus giving the leucocytes a chance to penetrate into the nervous tissue.

Histological findings are still wanting in order to arrive at a more rational and scientific treatment. This would lead us to search for a substance that will have all the advantages of malarial therapy without its disadvantages. The Riga pathologist, Aldelheim, reports seven deaths after malarial therapy. In five of them severity of the acute inflammatory process in the brain was striking. Freeman, in the *Journal A. M. A.*, March 16, 1927, likewise points to the increased blood supply to the brain after malarial therapy. To sum it briefly, malaria seemed to cause a hyperemia of the brain, which, later organized, caused resolution of gumma where formed, a cessation of glia proliferation with absence of plasma cell infiltration—a return in some to a condition so near normal that one would hesitate to call the brain one of a paretic.

Stratman-Thomas are inclined to ascribe the clinical betterment with tryparsamide therapy, not to superior penetrability, but to reabsorption of inflammatory exudate and improvement in cell nutrition, and the betterment in serology to decrease spirochaete interreaction in the tissue.

Luetin (Noguchi), an emulsion of treponemata, was injected into the skin in an endeavor to produce a cutaneous reaction similiar to the Von Pirquet test for tuberculosis. Klausner was the first to describe the red elevated oval infiltration produced by this test. With this thought in mind, and after experimentation with animals in which a slight degree of hyperemia was produced in the meninges and cord, Driscoll suggested the employment of luetin in our four series of paretics, treated as follows:

Series I. Neo-salvarsan ¼ mg. intra-spinally.

Series II. Luetin ¼ c.c. to 1 c.c. intra-spinally.

Series III. Tryparsamide 2 gms. intravenously.

Series IV. Coley's fluid 3 mm., increasing gradually, intravenously.

### Neo-Salvarsan Intraspinally

Time will not permit case reports of our experience with neo-salvarsan ¼ m.m. intraspinally, at weekly intervals. In this series the age group was younger than all other series. The patients' ages were 29-35-52-55, respectively. None died, but none have improved. This group was also the best physically at the beginning of treatment.

The *U. S. Bulletin* says, "experience shows that the arsphenamines are deficient in therapeutic action in parenchymatous syphilis. Weschler says, "The results in neuro-syphilis from arsphenamine, according to Nonne and Petry, are no better than from mercury and iodides."

### Luetin Therapy

By five phases positive we mean, blood Wassermann, spinal fluid Wassermann, and high cell count 12 or over, and globulin positive.

James M., age 30, five phases positive, weight 135. Patient is excited with expansive delusions of wealth. Has millions of wives

and race horses, and twenty-seven fine cars. General nutrition good.

Treatment.—Treponemata, ¼ c.c. 11/22/27: ½ c.c. 12/19/27; 1 c.c. 1/26/28. This last dosage caused severe headache, temp. 101, so was reduced to ½ c.c. 2/12/28.

January 12.—Improved physically. February 15.—A change for worse. February 18.—Delusions of wealth still persisting; status slightly improved physically with increase in weight to 155 lbs. Following the last two injections, the patient has had temperature 101 to 102, with 10,000 leukocyte count.

Ed. T., age 40, 5 phases positive. Weight 143 lbs. General state of nutrition good. Patient is confused, delirious, incoherent, flow of ideas, slight slurring of speech. Reflex normal on the left, and diminished on the right.

Treatment.—Treponemata, ½ c.c. 1/22/28: 1 c.c. 1/26/28 (with reaction); ½ c.c. 2/5/28; ½ c.c. 2/12/28.

This patient also had eight injections of mercury (mercurosal). Patient still confused. No gain in weight. Slight improvement.

Silas T., age 29. Condition very poor. Was depressed, heard voices, imagined someone had written his name on wall and had conjured him. This man was disoriented, silly and depressed. Destroyed his clothing and bed. Five phase positive.

Treatment.—Tryparsamide was given December 11, 1927; luetin ½ c.c. December 15/27. Improvement was immediate. He gained in weight and lost his delusions. Was oriented and could recognize his wife. The dosage was increased to 1 c.c. He died within 24 hours. Brain was removed for study. The congestion was striking.

John W., age 45. Condition poor. Five phase positive. Patient was a vegetative organism occupying an *in utero* position in bed. Fed by an attendant. Was carried to the operation room for treatment. After two injections he enjoyed a period of excitement, running to and fro in the wards. At present he is quiet, no longer a bed patient, fairly well oriented and walks up for treatment. Has gained in weight and strength. Involuntary passage of urine still persists.

Striking hyperemia of brain. Case of Silas T. Death followed 3rd injection of luetin intraspinally.

Treatment.—¼ c.c. 12/1/27; ½ c.c. 12/11/27; ½ c.c. 12/15/27; ½ c.c. 12/19/27; 1 c.c. 1/26/28; ½ c.c. 2/12/28. Definite remission.

Robt. T., age 45. Condition good, weight 140 lbs. Five phase positive. At initiation of treatment was confused, dull, retarded and incoherent. Tremors of tongue, slurred speech, diminished knee reflex, ataxic gait, positive Romberg. Middle zone curve (mastic). Diagnosis—tabo-paresis. After five injections of luetin there has been no improvement. He

weighs 130 lbs. The course of tabo-paresis is progressing uninfluenced by the luetin.

Three other patients, Andrew Mc., Thomas R., Robt. C., ages 36, 45, and 41, respectively, received one injection each. Andrew Mc. received an additional dose. These patients were all in the terminal stage of paresis and subsequently died.

*Result:* Eight cases, four deaths; definite remission, one; marked improvement, one; slight improvement, one; no improvement, one; death due to injection, one, Silas T. Autopsy revealed nothing of importance with exception of the brain which was markedly congested. We have not received the microscopic report from Dr. Phillips at this time.

### Coley's Fluid

In the *Journal of the Kansas Medical Society* for September, 1927, Drs. Rotter and Knoop, of Parsons, Kansas, report having treated a paretic successfully, the first of its kind, in which Coley's fluid has been used.

So our problem was to prove or disprove the efficacy of Coley's toxin in the treatment of paresis and to ascertain its action. Other studies are being done, not mentioned in this report.

This preparation is a mixture of the toxins and derivatives of streptococcus erysipelatis and prodigiosus bacillus, which are grown separately, then killed, mixed, and finally diluted to a definite strength as determined by the percenetage of protein content.

The toxins were administered intravenously. Begun in every case with a very small dose, not over 3 minims for an adult, diluted with a little boiled water to insure accuracy of dosage. Subsequent doses were increased according to the tolerance of the patient.

### Case Histories

Washington S., age 45. Duration of attack 18 mos. Wife states that in 1922 his vision became impaired. He had 4 injections intravenously. No more complaint until 1926, when for a year he had the usual treatment weekly.

Spinal fluid and blood negative.

History of positive Wassermann. Ran paretic curve in October. Received four injections of Coley's fluid. Treatment discontinued because of physical condition of patient.

*Admission Note:* Delirium, change of expression, indecision, untidiness, change in attitude toward family. Attempted to kill wife with knife sometime previously.

*Mental Condition After Treatment:* Knows his wife, speaks rationally, is not confused. Mental condition approaches normal. Ate a large breakfast today, whereas a week ago he was fed by the attendant.

*Physical Condition:* No apparent improvement and no change in serology.

*Physical Examination on Admission:* Reveals slurred speech, increased knee reflex, spastic gait. Pupils are fixed.

Stephen, B., age 64. Diagnosed as senile psychosis. General state of nutrition poor.

*Psychoses:* Previous attack a month before admittance. Wandering incoherent talk and change of expression. Irritability, indecision, untidiness, morbid fears. Hallucinations—sees dead people. Five phase positive. Final diagnosis, general paralysis.

*Physical Findings:* Vertigo; positive Oppenheim, left. Tremor, loss of motor power in left arm, ex. reflexes, tongue deviates to left. Aortic regurgitation, arteriosclerosis. After three injections of Coley's fluid, treatment was discontinued because of patient's age and condition. Died Feb. 12, 1928. No autopsy procured.

Winston, L., age 68. Five phase positive. Condition very poor. Attack began two weeks before commitment. Indecision, restlessness, wandering, untidiness. Silly conduct.

*Diagnosis:* Senile psychosis on admission.

*Final Diagnosis:* Paresis.

*Neurological Findings:* Ex. reflex, positive Oppenheim, tremor of tongue.

*Date of Injection:* Jan. 16, 1928. *Spinal Fluid Serology:* 3+. Heavy trace of globulin, 30 cells, 44432 curve.

*Date of Injection:* Jan. 23, 1928. *Spinal Fluid Serology:* 4+. Globulin negative. 0 cells 00000 curve.

*Date of Injection:* Feb. 9, 1928. *Spinal Fluid Serology:* Globulin negative. 0 cells 00000 curve.

Died Feb. 11, 1928; circumstances of death unknown. Brain removed for study.

Willie D. and Wash B., aged 50 and 56, respectively, five phase positive, died after two and one injections respectively. Brains removed for study. The latter had chronic nephritis, arteriosclerosis, and general paralysis.

Roy C., age 35. Condition fair. Duration

of psychoses 6½ years. Wassermann, 1921, negative; spinal fluid negative. Increased globulin; 0 cell count. Paretic curve.

*Symptoms:* Slurred speech, ex. reflexes. Hallucinations. Disoriented for time. The Lord spoke to him and told him to repent. Delusions of grandeur. Thought souls were after him, and his wife was one of them, and he would kill her. Very antagonistic.

*Treatment:* This patient received six injections of Coley's fluid. Immediately after injection 15 c.c. of spinal fluid were removed. After the second treatment the spinal fluid was negative. Physically the patient has improved with gain in weight. He is approaching the normal mentally but still retains hallucinations concerning the Deity.

Walter T., age 45. Admitted May 10, 1919. Readmitted Sept. 1, 1928. Destructive and noisy. Condition poor. 5 phase positive. Physically poor and mentally confused. Two injections given; patient shows no change for better or worse.

Claudine S., age 33. Condition poor. Admitted Nov. 29, 1927. Weight 100 pounds. General state of nutrition poor. History of immorality, attempting to run out on street with no clothes on, delirium, excited, wandering and untidy. Symptoms developed rapidly. Delusions—some one was poisoning her. States she is 33 years old. Soon after admission greatly depressed. Physical ex. as above, with course tremors, ex. knee reflex on right, diminished on left. Co-ordination poor. Blood pressure 100/85. Five phase positive.

*Treatment:* Patient received five injections of Coley's fluid. Immediately after each alternate injection ten c.c. of spinal fluid was withdrawn. After the fourth injection the spinal fluid findings were negative. This patient has gained six pounds, tremors are not so pronounced, delusions not discoverable, patient very neat and tidy. Condition at present very good. Definite remission.

Luvenia P., age 49. Condition poor. Duration of present attack 6 months. Indecision, imsomnia, depression, change of expression, restlessness, impairment of memory, unable to recognize brother.

*Treatment:* One injection. Patient's condition so poor that we discontinued all treatment except iodides and general supportive measures.

### Summary.

Nine cases, deaths four; no improvement, one; slight improvement, one; markedly improved, two. Serology changes in four of the five studied for serology changes.

### Tryparsamide Therapy.

Reesé, of Wisconsin Psychiatric Institute, gives the following concise summary of tryparsamide: Tryparsamide requires three or four months, but it is decidedly beneficial in 60% of the cases. If controlled properly, it is not harmful to the optic tract.

Hecht refuses to employ tryparsamide, having obtained no success with it. Stokes states that the effect of this drug on advanced or fully developed paresis is especially disappointing.

We treated seven cases. All were under forty-five years of age. The dosage was 3 grams intravenously weekly. One, after no improvement, was given luetin—see Andrew Mc. One developed transient amblyopia and the drug was temporarily discontinued.

There were two deaths, two definite arrests of the progress of paresis with marked improvement, and one no change.

### Conclusions.

We are fully aware that it is impossible to draw definite conclusions from such a small number of cases in such a short space of time. It will take years of study, to justify our exaggerated hopes to ascertain whether these remissions are permanent.

The patients were not selected in series II and IV, or rather these groups were chosen because of the extreme hopelessness of their condition. Series I and III were less advanced in years and were in a better state of nutrition. However, we might say that in our small group of four cases, neo-salvarsan intraspinally was unsuccessful. General paralysis progressed uninfluenced by this mode of therapy.

In Series II—Luetin,—there was one definite remission but phenomenal changes here cannot be considered exceptional, because remissions occur spontaneously in from 13% to 25% of paretics. There was marked improvement in one case, and slight improvement in one. There was a total of eight of these cases. Pathological findings were grossly apparent and were in accord with the description by Aldelheim and others of a paretic brain after malarial therapy, as well as with Driscoll's

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artificial induction of hyperemia of the brain of dogs with luetin. If malaria favors the healing process by hyperemia of the brain, the rationale of luetin therapy has some *raison d' être.*

Series III — Tryparsamide Therapy — resulted in two definite arrests of the process in seven cases. This must be accepted with caution because of the spontaneous subsidence occurring in neuro-syphilis. Furthermore, eye symptoms developed in one of our cases, which indicates that this drug must be given with caution.

Series IV—Coley's Fluid—resulted in two being improved markedly, mentally and physically, although the one improved mentally does not give much promise. In this group the mortality was highest, but if the fact is taken into consideration that the condition of the majority of these patients was poor at the outset and that two were over 64 years of age and greatly deteriorated, this report will not compare so unfavorably with the other experimental work. The striking feature is the rise in temperature to 104 degrees and an increase in the leukocyte count to 35,000 within two hours after injection in those benefited, in contrast with a decrease in temperature and leukocyte count in those cases of unfavorable prognosis. The accidental discovery of serology changes as early as the second week of treatment demands study. Why should a strongly positive spinal fluid become negative after only two injections of this fluid?

We feel justified in making further careful study of the action as well as the results in a larger group of younger and better nourished patients with luetin, Coley's fluid, and tryparsamide, in addition to experimental work with the rabbit. Only this and careful observation over a long period of time will give us conclusions soundly based on fact rather than conjecture.

In conclusion, I would like to quote Jose, *Siglo med.*, Madrid: "Can we really hope to change lesions such as are present in the general paralytic by specific drugs? The nature and intensity of certain anatomical changes due to syphilis make restoration impossible. One could not expect to restore a nostril which has been partly destroyed, and one should not disregard similar destruction in the nervous system of the general paralytic."

Other sources of information, not mentioned in the report, are given below.

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A conference with a member of the medical staff of Manhattan State Hospital.

# Correspondence

**An Antidote for Poison Oak or Poison Ivy.**

TO THE EDITOR:

This is the season for universal travel, every one wants to get out in the woods.

It is also the season of luxuriant growth of wild grasses and shrubs, most of which are harmless, but one little vine with clusters of three green leaves exudes a substance that renders many a woods' lover miserable; this is poison oak or poison ivy. The sap from the leaves or the vine, toxicodendric acid, is the offending substance. Some people are immune to it, others are very susceptible.

The trouble usually starts on the back of the hands or wrists, but the poison can be carried to other parts of the body by the clothing or by scratching.

Several years ago I noticed in some journal that tannic acid was the antidote for poison oak and I have been using it ever since with gratifying results. I direct the patient to apply compresses of a saturated solution of tannic acid to the affected part.

This will generally relieve the trouble in a few days.

M. O. BURKE, M. D.

*Richmond, Va.*

# Roentgenology

**Roentgen-Ray Diagnosis.**

LEOPOLD JACHES, M. D., Radiologist, Mt. Sinai Hospital, New York City.

(*Continued from page* 350)

GASTRO-INTESTINAL TRACT

Following the example set by the American physiologist Cannon, the Munich physician Rieder added a bismuth salt to some pap or gruel and fed the patients this opaque mixture in order to visualize by filling the otherwise transparent stomach and intestines. Elimi-

nating the various bismuth combinations because of their toxicity roentgenologists now use the chemically pure barium sulphate, the emphasis being on the "chemically pure." Failure to take this precaution by the careless or inexperienced has resulted in the death of several patients.

The esophagus, stomach and small intestines are best studied by the barium meal, the opaque substance being administered in one of several vehicles, such as plain water, in which it does not dissolve, in buttermilk, zoolak, malted milk, one of the various cereals, or potato starch. Inventive persons have produced biscuits, gelatins and all sorts of concoctions, either to make the barium more palatable or to relieve the roentgenologist and his assistants from the drudgery of preparing the meal. Suffice it to say that the vast majority of roentgenologists do not take kindly to any of these.

The colon is best studied by the barium enema but may also be examined by the meal. The latter is contraindicated when there is evidence indicative, or suggestive, of even partial obstruction. The barium may harden like brick and may block a small passage. The enema is contraindicated when there is marked bleeding from the bowel, the possibility of perforation, and shortly after operations on the intestine, especially when there have been resections or anastomosis. A suture may give even when no force is used to administer the enema, and peritonitis may result.

*Esophagus.*—In the esophagus practically all lesions, except shallow ulceration of early carcinoma, can be discovered by the roentgen ray. Carcinoma, which may occur in any portion of the esophagus, is most frequent at the cardia or lower third, less so near the aortic arch. It is generally recognized by the irregular outline of the constriction and the rather insignificant dilatation above it.

Cardiospasm, on the other hand, has a smooth appearance, and the esophagus is enormously dilated, sometimes casting a shadow in the chest even without barium and simulating a mediastinal neoplasm. A barium mixture will help identify it. But even the smaller ones are very much dilated and tortuous.

Diverticula generally occur in the upper part of the esophagus, very rarely at the cardia. Fluoroscopically one can sometimes observe the filling of the diverticulum until it spills over into the normal lumen. Often the diverticula cause obstruction by pressure on the normal lumen. Pressure on the esophagus may also be caused by aneurysms, mediastinal tumors and other extrinsic lesions.

Benign strictures are sometimes encountered: they are generally caused by the swallowing of a corrosive. Metallic foreign bodies are easily recognized; non-metallic, such as fish bones, even beef or chicken bones, and vegetable or fruit seeds as a rule cannot be seen. Occasionally an opaque mixture may help to localize the offender without identifying it.

*Stomach.*—In the stomach, ulcer and carcinoma are most frequent, syphilis less so, and other neoplasms, such as lymphosarcoma, are rare.

Ulcer is generally characterized by a projection or niche or a flat defect on the lesser curvature; often it is accompanied by an hourglass constriction on the greater curvature opposite. Unless there is a niche, it is not easily recognized. If the flat ulcer is large and the patient is in the cancerous age, neoplasm should be thought of.

Carcinoma generally occurs on the greater curvature; less frequently it is found on the lesser curvature just below the cardia, but it may involve the entire gastric wall. It appears as a defect in the gastric contour and may be shallow or deep, of smaller or greater extent. Peristaltic waves are arrested at the proximal end and can often be seen to continue beyond the distal end of the lesion. Sometimes the neoplasm may reach such size as to block the pylorus and cause partial or total obstruction; at other times the growth may cause an abnormal patency of the pylorus, allowing the food to pour through it into the small intestines, resulting in exceedingly rapid emptying.

There is no characteristic roentgen ray picture of any type of neoplasm. All neoplasms appear as defects in contour. Those on the lesser curvature can often not be differentiated from ulcers.

Syphilis of the stomach also does not have distinguishing features. It simulates ulcers or neoplasms. In one case the syphilitic stomach resembled another which had been corroded by lye; without the history, an etiologic diagnosis could not have been made in either case.

*Duodenum.*—In the duodenum the most

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frequent lesion is ulcer of the first portion, the bulb. To Cole, of New York, belongs the credit for having called attention to the presence of a persistent deformity in the case of duodenal ulcer. Carcinoma of the bulb is rare. It cannot be differentiated from ulcer and is generally diagnosed on the operating table and more frequently by the microscopist.

Of late ulcers and carcinomas of other parts of the small intestine have been diagnosed with increasing frequency. The former are more easily recognized the nearer they are to the stomach, especially if they show a niche: the latter generally show more or less marked constrictions with dilatation of the loops proximal to them. But one should remember that not all constrictions are due to carcinoma; some may be caused by adhesions resulting from inflammation or surgical procedures. A knowledge of the history of the case is important.

*Colon.*—In the colon ulcerative colitis, diverticula, neoplasms or adhesions can as a rule be recognized. In ulcerative colitis there is absence of haustration when the colon is filled by an opaque enema, and there is a cylindric barium outline of the colon after the enema has been expelled. Diverticula appear as more or less numerous small circular shadows scattered throughout the entire colon after its lumen is empty of the barium ingested or injected. They are most frequent in the sigmoid. Neoplasms manifest themselves by filling defects and constrictions; the latter may also result from adhesions.

One thing must be borne in mind: that lesions of the colon occurring in the lower sigmoid, unless they are obstructive, may be overlooked. They are often hidden by the filling of the rest of the sigmoid. Various devices are resorted to, among others placing the patient in the Trendelenburg position. They sometimes help.

In making gastro-intestinal examinations it is important to combine fluoroscopy with roentgenograms. Palpation while screening will often eliminate an apparent constriction or filling defect. Duodenal bulbs may not show up on a large number of films, but may be discovered very quickly by fluoroscopic manipulation.

*Gall-bladder.*—The gall-bladder was the great bone of contention between two camps of roentgenologists, those who claimed ability to demonstrate the gall-bladder and stones when present in almost every patient, and those who maintained that gall-stones could be demonstrated only when they contain the necessary quantity of calcium salts and that a gall-bladder, if and when demonstrated, did not necessarily mean a pathologic one. The discussion went on fast and furious until about three years ago, when Graham, of St. Louis, and his co-workers announced the successful result of their painstaking search for a chemical that has a selective action on the liver and from there is excreted into the gall-bladder. A few of the roentgenologists who previously claimed the ability to demonstrate gall-stones and the pathologic gall-bladder in 100 per cent of the cases still belittle the value of the Graham test. But their number is rapidly diminishing. One of the things that the Graham test has settled above all is that the so-called gall-bladder shadows that appear on films when no dye was given are, more often than not, something else. In many cases where the actual gall-bladder shadow was demonstrated by the dye another pyriform density can be seen which in the pre-Graham days might have been called a gall-bladder. As long as the dye was administered intravenously the method was applied sparingly, but now since the oral administration of tetraiodophenolphthalein has proved successful, no suspected gall-bladder need go unexplored.

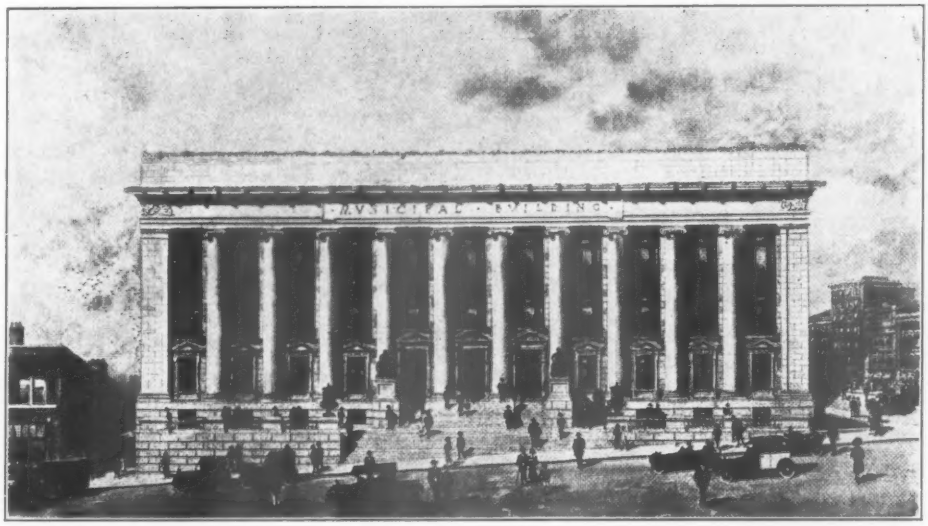
This method demonstrates the size, shape, contour and position of the gall-bladder, and whether there are constrictions, kinks or other deformities. Normal emptying and filling time can be studied. The presence of radiotransparent gall-stones can be shown by areas of transparency within the opaque gall-bladder shadows. Opaque gall-stones can be more certainly localized in the gall-bladder, and sometimes additional transparent stones are revealed.

A word of caution: Transparencies may not be due to gall-stones, but to gas in the overlapping intestines, and deformities may be due to the position of the patient and not to adhesions. Experience alone enables one to make the differentiation. Nonfilling of the gall-bladder with dye means a pathologic condition in a large percentage of the cases in which it occurs. At least two attempts to fill it should be made before a definite pathologic diagnosis is made.

*(To be continued).*

# OUR CONVENTION CITY

## *Danville, Virginia*




Municipal Building.

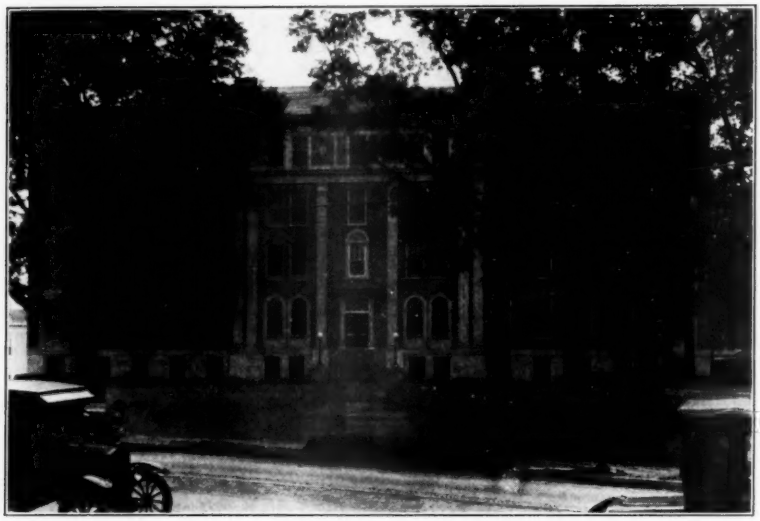
The City of Danville, incorporated in 1793, is located in the southern part of Pittsylvania County, the largest county in the state, and in the heart of the justly celebrated Piedmont Section. The city and its suburbs have a population of over 35,000 people.

Danville is situated on the North and South Main Line of the Southern Railway, is the western terminal of the Richmond and Norfolk Division of the Southern Railway, the eastern terminal of the Danville & Western Railway, and has forty-seven passenger trains daily. Good roads radiate from Danville in all directions and licensed bus lines, making forty trips daily, run into Danville from all the nearby cities and towns.

The Dan River, on whose banks the city is located, has a partially developed water power of forty-four feet fall, within easy reach of the city. With an elevation of six hundred feet above sea level, in view of the nearby Blue Ridge Mountains, the climate is delightful all the year, the temperature ranging from twenty degrees to ninety degrees. Rainfall is sufficient but not excessive, the average being 3.70 inches.

The water supply of Danville is ample for a city of 75,000 people. Its lightness and pur-

Hill Top Sanatorium.



Memorial Hospital.

ity make it excellent for drinking and household purposes.

Danville owns and operates her water, gas, electric light and power plants, the products of which are furnished at an exceedingly low rate. In excess of the city's needs, there is an ample supply for manufacturing purposes. Danville has one of the lowest tax rates in the state.

Danville has three parks, the largest of which is known as Reservoir or Ballou Park.

Danville is one of the largest bright loose leaf tobacco markets in the world, with well equipped establishments for the sale and handling of the bright types of tobacco, known the world over as "Virginia Tobacco." There are ten immense warehouses here for the sale of leaf tobacco at auction. The city's storage capacity is one hundred thousand hogsheads and many of the largest plants for rehandling and redrying tobacco in the South are located here. The sales of loose leaf tobacco at auction were 56,022,169 pounds for the season of 1927-1928, for the sum of $11,865,488.44. The 1927-

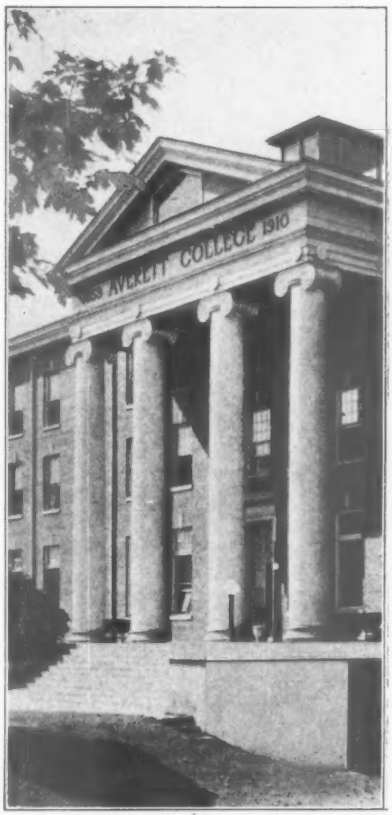
Edmunds' Hospital.

1928 season was 5,742,129 pounds higher than the preceding season. In addition to the sales by the warehouse, approximately fifty million pounds of tobacco from other markets are shipped into Danville each season for redrying and storing.

Danville has one of the largest cotton mills in the world, the Riverside and Dan River Cotton Mills, a Danville institution, originated and still controlled by progressive Danville citizens. These mills are valued at thirty million dollars, employ six thousand people, consume nearly fifty million pounds of cotton annually, producing over one hundred and fifty million yards of cloth per year, worth close to twenty million dollars, and their annual payroll is five million dollars. Danville is recognized as one of the leading manufacturing cities in the State of Virginia. Among her leading manufactured products are cotton goods, hosiery, broad silks, overalls and garments, elevators, flour, feed, tobacco, furniture, paint, sash, doors and blinds, harness, wagons, truck bodies, lithographing, ice, ice cream, soft drinks, butter, etc.

Danville has two national and four State banks with resources totalling over sixteen million dollars. There are several Building and Loan Associations in the city which render efficient service.

The public school system of Danville is ably and efficiently conducted, with modern buildings well located, and well constructed, with




Averett College.

Randolph-Macon School for Girls.

Y. W. C. A.

$400,000.00 of new buildings and improvements just completed; an up-to-date high school, two junior high schools, seven elementary schools and two night schools, with a fine teaching organization. In addition to the public school system there are two excellent schools for young women, one fine military school for boys and young men, and other private schools.

Averett College, formerly known as Roanoke College, now entering its seventieth year, is a standard Junior College. This institution for young women meets the standards of the State Board of Education and of the best four-year colleges. Work in high school, and in the first two years of standard college work, is offered along with special courses in music, art, expression, home economics and business courses. A new fire-proof science and music building is being completed this summer. The property is valued at $350,000. The attendance during the past twelve months was 380. All rooms in the dormitories are full and the outlook is promising. Last session one hundred and seventy-eight day students attended from the city of Danville.

In 1897 the Board of Trustees of Randolph-Macon Woman's College established in Danville a preparatory school for girls. It was first named Randolph-Macon Institute, but the name was later changed to Randolph-Macon School for Girls. The main building, with its beautiful Southern architecture, is on the main street of the city. To its side and rear the large, beautiful campus provides facilities for tennis, basket-ball, golf, track, etc. The art studio and student club house are located near the main building. The school has both boarding and day pupils, but the primary department is composed of local

Hotel Danville—Convention Headquarters.

Hotel Burton.

pupils only. Excellent college preparatory and general academic courses and splendid departments of music, art, and expression have gained for the school an enviable reputation. Visitors are always welcome.

Danville has forty churches of various denominations, many of them new and handsome. The city has a high moral and religious tone. There are modern and well equipped Y. M. C. A. and Y. W. C. A. buildings. The free public library has its home in the Confederate Memorial Mansion, the "Last White House of the Confederacy."

There are two progressive, ably edited, daily newspapers, the "Danville Register" and the "Evening Bee," also two weekly denominational papers.

HOTELS: The Hotel Danville, Hotel Burton, Hotel Leeland, Hotel Stonewall and the Hotel Pittsylvania, with a total capacity of over one thousand people, furnish ample accommodations for the traveling public.

Danville has three general hospitals, the Hughes' Memorial, recently completed and modern in every respect, the Edmunds' Hospital, the Providence Hospital (colored), and Hill Top Sanatorium, for tubercular patients, which is beautifully located one mile from the city.

Danville has an up-to-date and well equipped Health Department, with ample offices, clinic rooms and laboratories in the new Municipal Building. Regular clinics are conducted by well known specialists in tubercular diseases, pediatrics and orthopedics.

The Hughes' Memorial School, recently completed, is situated five miles from town and furnishes a home and school for destitute and needy orphan children of Virginia and North Carolina.

### ORGANIZATIONS.

BUSINESS: Chamber of Commerce, Retail Merchants, Community Stores, Business and Professional Women's Club.

CIVIC: Rotary, Kiwanis, Lions.

SOCIAL AND RECREATIONAL: Golf Club, Country Club, Tuscarora Club, Elks Club, and the Wednesday, Shakespeare and Garden Clubs for Ladies.

Danville, a city with beautiful homes and hospitable citizens, welcomes the members of the Medical Society of Virginia, their wives and friends.

Elks' Home.

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# Proceedings of Societies

**Medical Society of Northern Virginia.**

The Warren-Rappahannock-Page Medical Society met at Flint Hill, August the 14th, with the following doctors in attendance: Drs. H. I. Pifer, P. W. Boyd, J. E. Harris, E. C. Stuart, R. M. Glass and H. H. McGuire, of Winchester, C. O. Dearmont, of White Post, D. M. Kipps, E. L. Grubbs, L. F. Hansbrough and W. J. Olds, of Front Royal, E. W. Brown, of Washington, Va., E. R. Browning, of Flint Hill, J. R. Boldridge, of Hazle River, and George H. Long, of Luray. The subject of special interest at this meeting was as to the amalgamation of the medical societies of that section into one live organization. After a free discussion, it was decided to band together the counties of Shenandoah, Frederick, Clarke, Warren, Rappahannock and Page and to name this society the "Medical Society of Northern Virginia." The election of officers was next in order and it was decided that the officers of the Warren-Rappahannock-Page Society continue for the remainder of the year. They are Dr. Virgil Hammer, Luray, president; Dr. Reginald Munson, Linden, vice-president, and Dr. George H. Long, Luray, secretary-treasurer.

It was decided to hold the next meeting in Winchester on the second Tuesday in November.

**The Dickenson-Buchanan County Medical Society**

Met at Haysi, Va., July the 19th. In the absence of the president, Dr. J. C. Moore, of Fremont, the meeting was called to order by the vice-president, Dr. J. G. Storie, of Grundy. An address of welcome was given by Mr. Z. L. South, of Haysi, and response was made by Dr. Storie. Dr. A. S. Richardson, O'Keeffe, W. Va., spoke on "The Progress of the Country in the Mountains of Southwest Virginia", and Dr. W. R. Culbertson, of Norton, read a paper on "Sanitary Conditions in the Country". After these, an old fashioned dinner was served at the Haysi Hotel. Following dinner, papers were read by Dr. G. W. Botts, of Norton, on "Cancer of the Larynx", and by Dr. L. W. Newland, Splashdam, on "Digitalis Therapy". All of these papers had good discussions. It was decided to hold the next meeting in the offices of Dr. J. G. Storie, at Grundy, on October the 24th.

Although a small society and the youngest in the "county society family" of Virginia, this meeting shows that it is wide-awake organization.

**The Augusta County Medical Association**

Held its regular quarterly meeting in Waynesboro, Va., August the 1st. After clinical case reports by Drs. Kenneth Bradford and M. J. Payne, the election of officers was held, vice-president Dr. R. S. Griffith, being in the chair. Dr. George F. Hollar, Waynesboro, was elected president; Drs. Q. H. Barney, Mt. Sidney, Wm. Luders, Staunton, and J. E. Womack, Staunton, vice-presidents; Dr. Wm. F. Hartman, Staunton, secretary; Dr. T. M. Parkins, Staunton, treasurer; and Drs. M. J. Payne, Staunton, and Ernest Mosby, Waynesboro, censors. Following dinner, talks were given by several members. The next meeting will be held on the first Wednesday in November.

It is interesting to note that this society was organized in September, 1904, and three of the charter members, Drs. R. S. Griffith, W. F. Hartman and M. J. Payne, attended this meeting. The society now has a membership of thirty-eight. Twenty-eight of its members have died or moved away since 1917 which indicates the changes constantly taking place.

**The Floyd County Medical Society,**

At its meeting held in August, elected Dr. J. M. Harman, Floyd, delegate, and Dr. J. L. Harvey, Simpsons, alternate, from their Society to the Danville meeting of the State Society. It was decided that in the future meetings would be held quarterly instead of upon call of the president. Dr. J. M. Harman, Floyd, is president, and Dr. R. T. Akers, Alum Ridge, secretary of the Society.

**The Lee County Medical Society,**

At its stated meeting at Pennington Gap, Va., August the 27th, elected Dr. P. D. Pence, St. Charles, delegate, and Dr. Geo. W. Young, Pennington Gap, alternate, from that Society to the Danville meeting of the State Society. Dr. P. D. Pence is president, and Dr. W. J. Innes, Pennington Gap, secretary.

**The Fairfax County Medical Society**

Met in Herndon, Va., on Thursday, August 2, with Dr. William Meyer, president of the organization as host. Others assisting Dr. Meyer in entertaining were Dr. Charles F. Russell, Dr. C. Augustus Simpson, of Washington and Herndon, Dr. J. T. Jones and Dr. E. C. Schull.

A paper on "Syphilitic Aortitis" was read

by Dr. H. H. Halley and the discussions were made by Dr. Swain, Dr. Stacy Noland and Dr. Schoenfeld. Dr. Calhoun Stirling read a paper on "Prostatic Enlargement", Dr. Foote leading the discussion.

At the election of officers, Dr. Charles F. Russell, of Herndon, aged eighty-nine years, was chosen president; Dr. S. B. Moore, of Alexandria, vice-president; Dr. Oscar C. Wilkinson, of Washington, second vice-president; Dr. William P. Caton, of Accotink, secretary and Dr. F. M. Brooks, of Fairfax, treasurer.

Dr. Brooks was appointed delegate and Dr. Edward McCarthy alternate to the meeting of the Medical Society of Virginia to be held in Danville in October.

They claim to have as their president, the oldest M. D. in the United States who still practices medicine—Dr. Charles F. Russell.

**Fauquier and Loudoun County Medical Societies Entertained.**

On July 27th, Dr. and Mrs. W. O. Bailey entertained members of the Fauquier and Loudoun County Medical Societies and several doctors from Washington, D. C., at their home in Aldie, Va. About fifty of their friends among the laymen were also invited for the supper and entertainment. The doctors took this occasion to have a medical meeting, at which Dr. John A. Gibson, of Leesburg, president of the Loudoun County Medical Society, presided.

**Lynchburg and Campbell County Medical Society.**

Dr. J. P. Greenhill, associate of Dr. DeLee's at the Chicago Lying-In Hospital, presented a paper on "Conduction of the Second Stage of Labor" and gave a lantern demonstration of operations at the Lying-In Hospital, at the meeting of this Society in Lynchburg, Va., September the 3rd.

DIFFICULTIES

The harder the thing is to do
The greater the joy when it's done,
The farther the goal is from you
The sweeter the thrill when it's won.
The deeper the problem, the more
Is the joy when you've puzzled it out
The seas that run farthest from shore
Are only for ships that are stout.
Men weary of lessons they've learned
And tire of the tasks they can do,
Life it seems is forever concerned
With blazing a path to the new.
So stand to the worry and care,
Everlastingly keep going on,
The greater the burden you bear,
The greater the joy when it's done.—*Guest.*

# Woman's Auxiliary, Medical Society of Virginia

DOCTOR: PLEASE CALL ATTENTION OF YOUR WIFE TO THIS DEPARTMENT.

**At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.**

**All communications should be addressed to Mrs. E. F. Truitt, Secretary and Treasurer, Cottage Toll Road, R. F. D., Norfolk, Va.**

**The Danville Meeting.**

As the time draws near for the annual meeting of the Medical Society of Virginia, the women of the Danville Auxiliary are busy planning for the entertainment and pleasure of their guests. Headquarters will be in the new Hotel Danville, and all the scientific meetings will be centered in and around the hotel.

The Woman's Auxiliary meetings will open on Tuesday, October 16th, with a luncheon given by Mrs. T. W. Edmunds, Entertainment Chairman and President of the Danville Auxiliary, in honor of the two State Presidents, Mrs. Southgate Leigh, of Norfolk, and Mrs. Francis W. Upshur, of Richmond, and to the members of the Executive Board, a meeting of which will be held immediately after the luncheon.

There will be another luncheon on Wednesday, given by the Danville Woman's Auxiliary, honoring the two invited guests, who are members of the National Board, Mrs. Seale Harris, of Birmingham, a past President, and Mrs. Morris Fishbein, of Chicago, and honoring all visiting ladies.

There will be a dance and reception on Wednesday night, with a drive and other entertainments on Thursday.

The Woman's Auxiliary to the Medical Society of Virginia extends a cordial invitation to ever woman member of the doctors' families to come to this meeting. It is hoped that you will begin now to make arrangements and will urge your doctor to bring you to Danville, especially on Wednesday, October 17th, for that is "Auxiliary Day" and we want you to hear the address of your two Medical Presidents, Dr. J. W. Preston and Dr. J. Bolling Jones, also of four of our guests, Dr. and Mrs. Seale Harris and Dr. and Mrs. Morris Fishbein.

If you are not a member of the Auxiliary,

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come and join; then you will realize the pleasure obtained from contact with the splendid women from all over our State.

The National Woman's Auxiliary has made such wonderful progress, and the value of its activities has been so fully demonstrated that today the Auxiliary is deemed a necessary feature, not only of the A. M. A., but of every Medical Society in the country. The Auxiliary has been the agency in bringing about more friendly relations and a better understanding between our members. Its ministrations have been altogether useful, and this has been in evidence not only at the annual conventions, but through the work of the Association during the intervening months. The strength of numbers and the power of organized effort has brought most wonderful results.

The Auxiliary is apart from other organizations in that it serves only one, the medical profession, and will avoid all entangling alliances. It has established a friendly and cooperating relationship with the National Woman's organizations all over our country, representing three and one-half millions of intelligent, capable women; so that, through the judicious influence of the doctors' wives in these organizations, dependable health programs can be provided, instead of irrational propaganda of various cults.

The opportunities for service are unlimited; our task has only begun. The lack of understanding on the part of the doctors, and it is useless to attempt to interest the wives unless the men feel there is a need for the Auxiliary, has delayed the growth in the County organizations in Virginia. If every physician in the State, and almost as many wives, could feel and realize the wonderful opportunity for service, what a tremendous power for good they could wield!

Women, let us go to this meeting with open hearts and minds, ready to co-operate and help Virginia hold up her traditions. We must not say that "our county is over organized". We, the doctors' wives, are a part of every club and organization in our county. It is this influence as doctor's wives that is needed for the good of the medical profession and the people.

**PROGRAM**

**Tuesday, October 16th**

Luncheon and Executive Board Meeting.

**Wednesday, October 17th**

General meeting, 9:30 A. M., at the Y. M. C. A.
Invocation.
Address of Welcome by Mrs. T. W. Edmunds.
Response.
Addresses by invited guests:
Dr. Seale Harris,
Dr. Morris Fishbein.
By Medical Presidents:
Dr. J. W. Preston,
Dr. J. Bolling Jones.
Address—Mrs. Seale Harris, Birmingham, Past President National Auxiliary.
Adjournment for lunch.

All visiting ladies will be guests of the Danville Woman's Auxiliary at lunch.

**Afternoon Session**
**2:30 P. M.**

Address—Mrs. Morris Fishbein, Chicago, Member of National Executive Board.
Reading of minutes of last meeting.
Report of minutes of Executive Board.
Report of Secretary.
Report of District Chairmen.
Report of Delegates to the American Medical Association.
Reports of Standing Committees:
Health Education,
Hygeia,
Organization,
Legislative,
State Editor,
Parlimentarian,
County Presidents.
Reports of Special Committees.
Report of Nominating Committee.
Installation of President.
Address of President.
Report of Resolutions' Committee.
Adjournment.

**Thursday, October 18th.**

Executive Board meeting with President and Newly Elected Officers.

# The Truth About Medicine

In addition to the articles enumerated in our letter of June 29th, the following have been accepted:

Chicago Dietetic Supply House.
Cellu Soy Bean Flour.
Cellu Soy Crisp.

Mead Johnson & Co.
Mead's Powdered Boilable Lactic Acid Milk.

Parke, Davis & Co.
Cotton Protein Extract Diagnostic—P. D. & Co.; Cottonseed (Cake) Protein Extract Diagnostic—P. D. & Co.; Goat Hair Protein Extract Diagnostic—P. D. & Co.; Human Hair Protein Extract Diagnostic—P. D. & Co.; Kapok Protein Extract Diagnostic—P. D. & Co.; Peptone Protein Extract Diagnostic—P. D. & Co.; Poplar Pollen Protein Extract Diagnostic—P. D. & Co.; Sunflower Pollen Protein Extract Diagnostic—P. D. & Co.; Sweet Vernal Grass Pollen Protein Extract Diagnostic—P. D. & Co.

**NEW AND NONOFFICIAL REMEDIES**

Paroidin. — Parathyroid Extract — Hanson. — An aqueous solution containing the active principle or principles of the parathyroid gland of cattle and having the property of relieving the symptoms of parathyroid tetany and of increasing the calcium content of blood serum. It is standardized by its capac-

ity to increase the blood serum calcium in parathyroidectomized dogs. Parodin is of pronounced and definite value in the treatment of tetany. To guard against the serious consequences of hyperthyroidism, excessive doses of paroidin must be avoided and large doses of the preparation must not be administered without estimation of the blood serum calcium. Paroidin is marketed in 5 c.c. ampules, each c.c. containing 150 Hanson units. Parke, Davis & Co., Detroit.

Squibb's Vitavose.—A maltose-dextrin preparation representing the water-soluble extractives of malted wheat germ. It is composed, approximately, of maltose, 38 per cent; dextrins, 20 per cent; soluble proteins, 8 per cent; soluble amino and other nitrogenous substances, 7 per cent; mineral salts, 4 per cent; moisture, 3 per cent. It is standardized physiologically to contain at least 100 times the amount of the antineuritic factor (vitamin B) contained in fresh, raw, certified, whole cow's milk. Vitavose is used as an adjunct in the diet of children and invalids and where there is a need for greater amounts of vitamin B than are furnished by the individual's customary diet. E. R. Squibb & Sons, New York.

Gentian Violet Capsules—Swan-Myers, 1 grain.—Each keratin coated capsule contains gentian violet medicinal (New and Nonofficial Remedies, 1928, p. 172) 0.65 Gm.; with lactose. Swan-Myers Co., Indianapolis.

Capsules Ephedrine Hydrochloride—Pemco, ¼ grain.—Each capsule contains ephedrine hydrochloride—Pemco (New and Nonofficial Remedies, 1928, p. 176 ¼ grain. Prophylactoc Mfg. Co., Chicago.

Capsules Ephedrine Hydrochloride—Pemco, 0.3 Gm.—Each red capsule contains ephedrine hydrochloride—Pemco (New and Nonofficial Remedies, 1928, p. 176) 0.3 Gm. Prophylacto Mfg. Co., Chicago. (Jour. A. M. A., July 7, 1928, p. 28).

## PROPAGANDA FOR REFORM

Vitalipon Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Vitalipon is claimed to be a 5 per cent solution in olive oil of lipoids extracted from vegetable and animal embryonic organs with the addition of cajeput oil. Consideration of Vitalipon was requested by C. G. Crosby, New York. In the material submitted in favor of Vitalipon, the statement was made that "Vitalipon is the outcome of over thirty years' research work by Dr. O. Schaer, of Zurich, Switzerland, in his efforts to develop a cure for carcinoma." In addition to the brief statement of composition, uses, etc., submitted by C. G. Crosby, three documents written by Dr. Schaer were also submitted. The Council found Vitalipon unacceptable for New and Nonofficial Remedies because it is an unscientific and indefinite mixture marketed under an uninforming proprietary name and with unwarranted therapeutic claims. (Jour. A. M. A., July 7, 1928, p. 29).

Diphtheria Toxoid.—In the hands of Ramon and his co-workers in Paris, diphtheria toxoid has given satisfactory results in the prevention of diphtheria. According to reports it is being used on a large scale in France. The obvious advantage of diphtheria toxoid over antitoxic serum is that toxoid does not contain any protein of any foreign animal species. The H. K. Mulford Co. is supplying the product and has requested its consideration by the Council on Pharmacy and Chemistry. (Jour. A. M. A., July 7, 1928, p. 45).

Combinations of Cod Liver Oil and Phosphorus Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that the use of elementary phosphorus in the treatment of rickets is based on the observations of Wegner in 1874, that the administration of white phosphorus in minute amounts caused the formation of a dense band at the epiphyses of the long bones. Subsequently conflicting reports as to the value of phosphorus in rickets were published. Death occurred in several instances from excessive doses of phosphorus. Practically all those claiming to have obtained good results from the use of phosphorus used it in combination with cod-liver oil (now known to be a specific in rickets). The accumulated evidence is unconvincing as to the value of phosphorus; furthermore, it is known that phosphorus is a dangerous drug and the routine administration of phosphorus in combination with cod-liver oil is to be discouraged. In consideration of the new evidence and the opinions based thereon, the Council decided that preparations of cod-liver oil containing phosphorus are unacceptable for New and Nonofficial Remedies as being unscientific and inimical to the best interests of the public and the medical profession. The Council decided to omit from New and Nonofficial Remedies all mixtures containing phosphorus in combination with cod-liver oil. (Jour. A. M. A., July 14, 1928, p. 97).

Iosaline Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that according to information supplied by the Iosaline Co., Inc., Iosaline is a mixture containing potassium iodide, equivalent to 5 per cent of iodine; menthol, 1 per cent; methyl salicylate, 12 per cent; alcohol, 70 per cent. Only indefinite statements of composition appear on the label and in the advertising. The Council reports that, although it is well known that potassium iodide is not absorbed to any extent when applied to the skin, the advertising claims that the iodine of Iosaline is readily absorbed. The Council held the preparation unacceptable for New and Nonofficial Remedies because the quantitative composition is not declared on the label and in the advertising; because its name is not descriptive of its composition, and because it is sold with unwarranted therapeutic claims. (Jour. A. M. A., July 21, 1928, p. 173).

The Iron Content of Foods.—As a carrier of oxygen and as an activator of cell functions, iron has significance out of all proportion to the amount in the body—less than a tenth of an ounce, or the weight of a cent. The function of iron in the body has been responsible for considerable pseudo science and actual quackery. The billboards have sounded the call to have one's iron day by day. As regards the possibility of a shortage in the iron intake through food, Sherman states that the typical American dietary does not furnish any such surplus of iron as would justify the practice of leaving the supply of this element entirely to chance. Rather, foods should be selected with some reference to the kinds and amounts of iron compounds which they contain. Arranged in descending order as to their iron content, as determined by recent analyses, the classes of foods come as follows: dried legumes, green leafy vegetables, dried fruits, nuts, cereals, poultry, green legumes, roots and tubers, non-leafy vegetables, fish and fruits. Different samples of the same food material show great variations in their iron content. Cabbage, celery and head lettuce, vegetables containing little chlorophyl, were found to be low in iron. Salt water fish contain more iron than fresh water fish. Fish with dark-colored tissue contain more iron than those with light-colored tissue. The dark meat of poultry is likewise higher in iron than the light meat. (Jour. A. M. A., July 28, 1928, p. 250).

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# Virginia Medical Monthly

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A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.

B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va
A. L. GRAY, M. D., Richmond, Va.

ALEX. G BROWN, Jr., M. D., Editor.

AGNES V. EDWARDS. Business Manager and Secretary-Treasurer.



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# Editorial

## Our Centenarian Medical Schools.

The coming Fall marks the beginning of another college session. Medical students will foregather in September at the colleges in America to begin another year's collegiate course in the fundamentals of the science and art of medical knowledge. Some will be just beginning, having had at least two years of college work, some will be entering upon the last year of college work.

It is impressive to realize that American doctors have been trained, in large part, in schools in America. For more than a hundred years, in fact, in the instance of the University of Pennsylvania, for one hundred and sixty-two years, American doctors have been trained in the beginnings of medical knowledge in American colleges. It is furthermore emphasized in this connection, that there are now ten American medical colleges that have been teaching medical students for a century, for practice in this country.

To Virginians it is interesting to know that of this venerable group of medical colleges the University of Virginia Medical School occupies no inconspicuous place. This venerable and honorable institution, founded by Thomas Jefferson, and adhering to high traditions and practices in classical and scientific education, through the generations of the past, is to be congratulated upon the coming session, particularly because of the fact that the coming year is the one-hundredth of its existence. During these great years, since 1828-29, this medical school of the University of Virginia has turned out young men who have taken foremost rank in medical practice in America and its record stands equal in quality to America's best scholastic achievements in this as well as other fields of knowledge.

It is also worthy of comment that another medical college in Virginia is soon to enter the centenarian group. The Medical College of Virginia, at Richmond, begins its ninety-first year. This college has done excellent teaching and at no time has it been more to be congratulated than now, under the splendid achievement of its teaching in the past few years. At both of these Virginia medical schools recent plans have been inaugurated that give promise of increased excellence in the courses and facilities offered and practiced in teaching medicine. Every Virginia physician who feels the highest devotion to the mission and service of medical practice must possess a keen interest in the State's welfare in the matter of medical teaching. It is, therefore, interesting to note that, in matter of age and service, our medical schools, while not as rich and well endowed as some sister institutions to the North of us, have done worthwhile service for generations past.

The following tabulation will be of interest in noting the time of service of centenarian medical schools in this country. This month the University of Pennsylvania School of Medicine begins the one hundred and sixty-third session; Harvard University Medical School begins the one hundred and forty-sixth session; University of Maryland School of Medicine and College of Physicians and Surgeons begins the one hundred and twenty-second session; Columbia University College of Physicians and Surgeons begins the one hundred and twenty-first session; Yale University School of Medicine begins the one hundred and fourth session; Jefferson Medical College begins the one hundred and fourth session; University of Virginia, Department of Medicine begins its one hundredth session; the Medical College of the State of South Carolina begins its one hundredth session; and the University of Georgia, Medical Department, begins its one hundredth session*.

*See recent issue J. A. M. A.

## Yellow Fever.

When Aristides Agramonte* reviews research in yellow fever, medical men may well give heed.

*For review see Annals of Internal Medicine, Aug. 1928.

One has only to recall that for four hundred years, yellow fever was a dreaded scourge of the human race in certain tropical areas of the world; that 50 per cent mortality marked its scourging incidence; that such cities as Havana, Vera Cruz, Panama, Guayaquil, and Rio de Janeiro were plague spots for generations; that appalling epidemics visited Philadelphia, in 1699, 1741, 1747 and 1762, imported from centers of the south, that ignorance of the epidemiology and etiology brought death to many hundred thousands, in order to respectfully attend upon a summary and read with interest a review of the work and discoveries that have brought about its practical annihilation within the short space of a score of years. While the causative agent remains unknown, it is upon the following items of knowledge that this dreadful malady has made former scourge spots of the south winter resorts and has brought security for life and commerce:

I. Yellow fever is transmitted by the sting of mosquitoes called Aedes Aegypti.

II. The mosquito becomes infected only when it stings the yellow fever patient during the first three days, possibly four days, of the disease.

III. The mosquito becomes infective only after the tenth day, in winter probably the twelfth day, of taking the blood from the yellow fever patient.

IV. The period of incubation in man does not extend beyond six days.

V. Articles of clothing or excreta of yellow fever patients are not infective.

**Tularemia (Francis' disease, Rabbit Fever, Deer-Fly Fever).**

Said to be "the first American disease", which is to say, that it is the first disease discovered by an American physician, Tularemia, is so-called, because McCoy and Chapin, in 1911, isolated the specific organism from ground squirrels dying of epidemic and plague-like illness in the County of Tulare, California. Hence from the place of the discovery of the specific organism of this disease it has derived its name—Tularemia. To Edward Francis of the United State Public Health Service, should go the larger credit for discovering the disease, for hooking up the ragged symptomatology of the plague-like disease of rodents, and the deer-fly fever of man described by Pearse in 1910. Francis, in 1919, began the study of a severe infectious disease of man, then called "deer-fly fever". He isolated from seven humans, ill with deer-fly fever, the organism discovered in Tulare County by McCoy and Chapin. Rabbit fever of market men, known among them for twenty-five years, has been shown by Francis to be due to Bacterium tularense.

Walter M. Simpson, Dayton, Ohio, has contributed an excellent paper* on Tularemia. Herein one may find historical references mentioned above; a discussion of the mode of transmission; clinical manifestations; clinical types (1) ulcero-glandular, (2) oculo-glandular, (3) glandular, (4) typhoid type; diagnosis and treatment. In addition to the above subjects, one may follow the clinical and pathological study of forty-eight non-fatal cases and one rapidly fatal case with autopsy. A full bibliography is attached to this excellent paper. The occurrence of this disease in Virginia suggests the editorial reference here, in order to emphasize among practitioners of the State the incidence of tularemia and to suggest by repetition, symptoms and diagnosis. Some of the items in the summary of Simpson's paper may be quoted:

(1) Up to May 1, 1928, reports of 613 authentic cases, including Simpson's series, have come to the attention of Francis. Cases have been reported in every state in the Union, except the New England States, Delaware, Wisconsin and Washington.

(2) There have been twenty-three recorded deaths.

(3) It has been demonstrated that the organism will pass through the unbroken skin.

(4) The disease known by ophthalmologists as Parinand's disease is similar to conjunctivitis tularense.

(5) Diagnosis is usually simple if one has a suggestive history, together with influenza symptoms. Confirmation is best made by specific agglutination tests at some laboratory provided with Bacterium tularense antigen.

(6) There is no specific treatment. The effect of immune serum, says Simpson, will be reported later.

*See Annal of Internal Medicine. June, 1928.

**The Danville Meeting.**

Members of the Medical Society of Virginia may expect an unusually interesting and profitable meeting at Danville. The doctors of Danville will extend a warm welcome. Every effort will be made to make visitors to this city

comfortable. Every convenience possible will be placed at the service of Medical Society of Virginia. The hotel accommodations will be adequate. Meeting places will be suitable and provided with facilities for general and committee meetings. Space for exhibits will be provided. The exhibit of the medical profession, displaying scientific work, will be worth careful inspection. This feature alone will stand out as especially noteworthy at this session and the exhibit hall will properly house this rather new feature of our State Society. Physicians, surgeons and hospitals, as well as medical colleges of the State, will take part in presenting exhibitions of scientific work in the fields of pathology, clinical medicine and surgery.

The clinics on Tuesday will be interesting and all members are urged to participate by attendance.

Invited guests, symposium and voluntary papers prepared by members, assure our membership of a program of unusual interest.

## News Notes

**Fall in Line for Danville!**

Our Danville meeting of the Medical Society of Virginia is just a little more than a month off and members are urged to plan their work so that they may attend this, the second meeting of the Society ever held in that city. Dates are October 16, 17 and 18, headquarters, the Hotel Danville, and president, Dr. John W. Preston, of Roanoke. In this issue, we present a most interesting, illustrated "write-up" of our Convention City. Read it and "fall in line for Danville!"

There will be much to entertain the early comer. On Tuesday morning there will be the usual golf tournament and we understand a prize is to be given. That morning, also, the Virginia Hospital Association, of which Dr. J. M. Shackelford, Martinsville, is president, will have its annual meeting. At 2 P. M., the House of Delegates will hold its first meeting in the Ball Room of the Hotel Danville. Each component society is urged to have representatives at this and other meetings of the House. This same afternoon, interesting clinics will be held in the City Health Department Clinic rooms in the Municipal Building from 2 to 6 P. M. This in an innovation which promises much of interest for the busy doctor. The first general meeting will be held Tuesday evening at 8 P. M., at which time there will be addresses by the president, by Dr. Seale Harris, of Birmingham, on "The Business of Keeping Well", and by Dr. Dean Lewis, of Johns Hopkins University, Baltimore. Other guests who will speak at later sessions are Dr. E. Starr Judd, of the Mayo Clinic, on "Dudodenal Ulcer", and Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, on "The Prolongation of Life".

The subject selected for general discussion this year is "The Anemias". The division of this subject, Physiology of the Anemias, Normal and Pathological, will be presented by Dr. Regena Beck, Richmond; Symptomatology and Diagnosis by Dr. C. D. Nofsinger, Roanoke; Medical Treatment by Dr. J. C. Flippin, University; and Surgical Treatment by Dr. R. L. Payne, Norfolk. Dr. Walter B. Martin, Norfolk, will open discussion on these papers.

The scientific sessions will be held at the Elks' Club—just across the street from the Hotel Danville and equally as convenient to the other hotels. Registration desk and information bureau will be on the first floor in this building. This Club will also house the commercial exhibits of which there are a goodly number and the scientific exhibits. This last feature is gaining in importance and this year we are to have the best scientific exhibit yet shown at one of our meetings. A dozen reservations had been made as we go to press. Another interesting feature will be a moving picture demonstration of some medical subject.

The Woman's Auxiliary has become quite a factor in our meetings. The ladies have arranged a most attractive program—one which will interest and entertain the wives and daughters of the visiting doctors, so bring the ladies with you. They will meet in the Y. M. C. A., just next door to Hotel Danville. In addition to the entertainments for ladies only, there will be a large supper and dance on Wednesday evening for members and visitors. The preliminary program for the Woman's Auxiliary appears under that department in this issue.

The Virginia Pediatric Society is arranging to have a luncheon meeting on one day during the State Society meeting.

While our attendance of members coming by railroad is not such as to secure for us reduced rates as some of the larger associations have, certainly one of the roads entering Danville has

had on special round trip tickets for limited time and distance. Ask about them and see if you are a "lucky holder."

Remember we get out of these meetings what we put in them. "'Nuf sed".

**The American College of Surgeons**

Will hold the eighteenth Clincal Congress in Boston, October 8-12. Headquarters will be at the Statler Hotel and meetings will be held in the ballroom of the Copley-Plaza Hotel and Symphony Hall. The Hospital Standardization Conference will be held in morning and afternoon sessions in the ballroom of the Copley-Plaza Hotel Monday, Tuesday, Wednesday, and Thursday. An innovation this year will be the commencement of the clinics in the Boston hospitals on Monday afternoon, continuing through the mornings and afternoons of the following four days. Monday evening's program will include an address of welcome by the local Chairman, the address of the retiring President, Dr. George David Stewart, New York, the inaugural address of the new President, Dr. Franklin H. Martin, Chicago, and the John B. Murphy oration on surgery by Professor Vittorio Putti, of Bologna, Italy. Tuesday, Wednesday and Thursday evenings' sessions will be held in the ballroom of the Copley-Plaza Hotel. At the Wednesday evening meeting the visiting surgeons will be the guests of the Boston Surgical Society at a special meeting when the Bigelow medal is to be awarded. On Friday evening the Annual Convocation of the College will be held in Symphony Hall when the 1928 class of candidates for Fellowship in the College will be received. The fellowship address on this evening will be delivered by Dr. William J. Mayo. The annual meeting of the Governors and Fellows will be held Friday afternnon and will be followed by a symposium on Traumatic Surgery to be participated in by leaders in industry, labor, indemnity organizations and the medical profession. Ether Day will be celebrated in the Dome Room of the Massachusetts General Hospital on Friday when a bronze bust of William T. A. Morton will be presented to the hospital. It was in this building that ether was first administered for the production of surgical anaesthesia on October 16, 1846. Several newly completed medical motion pictures produced under the supervision of the American College of Surgeons and approved by it will be shown during the Congress.

Reduced fares on the railways of the United States and Canada have been authorized to those holding a convention certificate so that the total fare for the round trip will be one and one-half the ordinary first-class one-way fare. Other outstanding features will be the exhibits. In addition to the commercial exhibits the departments of the College will present scientific exhibits. A number of distinguished foreign guests of international reputation have signified their intention of attending. The Chairman of the Boston Committee on Arrangements is Dr. Frederic J. Cotton.

**Dr. William C. Moomaw.**

For several years a resident of Petersburg, Va., has located at Port Chester, N. Y., where he will continue the practice of his specialty—diseases of the eye, ear, nose and throat. Dr. Moomaw graduated in medicine from the University of Virginia, in 1903, since which time he has done special work in New York and Paris.

**Capt. J. B. Mears, M. C., U. S. N.,**

For a number of years a member of the Medical Society of Virginia, has again been transferred and is now at the U. S. Naval Training Station, San Diego, Calif.

**Dr. Seth Gayle, Jr.,**

Of the class of '27, Medical College of Virginia, recently completed his internship at Fitzsimmons General Hospital, Denver, Col., and has been appointed a first lieutenant in the Medical Corps of the U. S. Army.

**Lt. Vincent Hernandez, M. C., U. S. N.,**

Who was for sometime stationed in Virginia waters, has recently been transferred to the United State Naval Hospital, Boston, Mass.

**Dr. Thomas M. Winn,**

Of the class of '22, Medical College of Virginia, after a short time spent at Richwood, W. Va., has returned to Virginia and is now located at Covington, where he is limiting his practice to diseases of the eye, ear, nose and throat.

**Health Associations to Meet.**

Eleven sections will comprise the fifty-seventh annual convention of the American Public Health Association, which will be held jointly with the meetings of the American Child Health Association and the American Social Hygiene Association, October 15th to 19th, inclusive, at the Stevens Hotel, Chicago. Sections will be divided into the following main groups: Epidemiology, Public Health Education, Cancer, Vital Statistics, Industrial Hygiene, Public Health Engineering, Child

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Hygiene, Laboratory, Health Officers, Food Drugs and Nutrition, and Public Health Nursing.

The discussions in each section will be led by an authority in that field. Dr. Edward S. Godfrey, Jr., Director of the Bureau of Communicable Diseases of the State of New York, will direct the section on Epidemiology—one of the most important divisions of the meeting. Dr. Godfrey will be assisted by Dr. Alton Pope, of Chicago, who will present a paper on "Fatality in Meningitis."

Convention discussions will be followed by laboratory trips, or inspection tours. Eighteen scheduled trips have been planned, and sixty-three optional ones are on the program, so that these tours will offer a wide range of interest and be of value to workers in every phase of health.

Over three thousand delegates and visitors, including physicians from England, Germany, Sweden, Mexico, Canada and the Canal Zone will be in Chicago to attend the meeting, which will open Monday evening, October 15th, with a general session at which Dr. Herman N. Bundesen president of the American Public Health Association, will deliver the opening address. A second general session will be held on Wednesday when Dr. Frank G. Boudreau will be present from the Health Section of the League of Nations at Geneva, Switzerland, to speak on "International Health."

**Maryland Plans Relief for Crippled Children.**

Several Maryland counties have organized clinics for the examination of crippled children during the summer, and an effort is being made to give them the benefit of skilled medical and surgical care either in local or in Baltimore Hospitals. The Maryland League for Crippled Children has estimated that Maryland has 4,500 crippled boys and girls under twenty-one, and that 2,000 of them live outside the city of Baltimore. A study made in Baltimore indicated that half the crippled children became disabled through infantile paralysis, and 16 per cent through tuberculosis; only about 6 per cent had been crippled from birth, and relief of some sort was possible for all but about 2 per cent.

**Honor Company at Encampment.**

The 110th Hospital Company, Virginia National Guard, of which Dr. John A. Hawkins, of Danville, is commanding officer, was the Honor Company of the 104th Medical Regiment at its annual encampment at Carlisle Barracks, Pa., from July 27th to August 10th. They took first place in every phase of military activity and also won the Regimental Athletic Trophy.

**Dr. R. T. Akers Heads School Trustees.**

Under the new school law, Dr. R. T. Akers, of Alum Ridge, Va., was re-appointed on the board of school trustees for Floyd County, Va., and was elected its president for the coming year.

**Vacations of a Few Virginia Doctors.**

Dr. L. S. Early, of Petersburg, and his niece have been cruising on the Great Lakes.

Dr. and Mrs. Carrington Williams and sons, of Richmond, have been visiting at Plattsburg, N. Y.

Dr. and Mrs. C. H. Iden and three young children, of Berryville, are home again after a vacation spent at Buckroe Beach, Va.

Dr. and Mrs. Paul W. Howle and daughter returned to their home in Richmond, early this month, after spending some time at Mountain Lake, Va.

Dr. W. C. Ford and two sons, of Woodstock, spent their vacation last month on a motor trip through Michigan and Illinois and other Central States.

Dr. F. W. Lewis, Richmond, spent his vacation this year, at his former home at Morattico, Va.

Dr. and Mrs. Hugh McGuire, Alexandria, have been motoring through France with friends.

Dr. M. O. Burke and family have returned to their home in Richmond after a motor trip to Hot Springs, Va., and through the western part of the State.

Dr. and Mrs. Mark R. Faville, Roanoke, returned home the latter part of August, after a visit to friends in Gloucester County, Va.

Dr. Emily Gardner, of the State Board of Health, Richmond, recently visited her home in Franklin, Va.

Dr. and Mrs. H. W. Porter and family, of Louisa, took a cottage at Virginia Beach, for two weeks in August.

Dr. and Mrs. Murat Willis, Richmond, left the middle of August for a trip abroad. They will be back early in October.

Dr. J. Minor Holloway has returned to his home in Fredericksburg, after a visit to the Mayo Clinic in Rochester, Minn.

Dr. and Mrs. Stuart McGuire, Richmond, spent their vacation motoring with friends through the White Mountains and Canada.

Dr. L. H. Hoover, Clarksville, visited Virginia Beach, last month.

Dr. and Mrs. Ben Gray, Richmond, have been spending some time at Fisher's Island, N. Y.

Dr. Susan W. Field, physician to the State Teachers' College at Farmville, is spending a vacation with relatives in Massachusetts.

Dr. and Mrs. Joseph Bear have returned to their home in Richmond, after a motor trip to Virginia Beach, Washington, Baltimore and Annapolis.

Dr. and Mrs. Francis W. Upshur have returned to Richmond, after a motor trip to Canada.

Dr. M. H. Watson, who is taking post-graduate work in New York City, visited his family in Chatham, Va., in August.

Dr. and Mrs. Arthur Brinkley and Dr. and Mrs. Ben Rosebro, Richmond, spent their vacation at Natural Bridge, Va.

Dr. and Mrs. Nash P. Snead, Cartersville, Va., were recent visitors in Norfolk, Va.

Dr. and Mrs. William H. Parker returned to their home in Richmond late in August after a stay at Camp Virginia, Goshen, Va.

Dr. and Mrs. W. T. McLemore, Courtland, recently motored to Philadelphia where they visited friends.

Dr. and Mrs. Frank Lord, Richmond, are home again after a visit to Hot Springs, Va.

Dr. and Mrs. E. F. Reese, Courtland, spent their vacation on a motor trip through the Valley of Virginia.

Dr. and Mrs. Karl S. Blackwell, and children, of Richmond, have been visiting relatives at Warrenton, Va.

Dr. and Mrs. W. C. Powell, Petersburg, spent the latter part of August at Mountain Lake, Va. This month they expect to attend the N. & W. Railway Surgeons' Association in Cleveland, Ohio.

**Texas Better Health Special.**

A special health-exhibit train, furnished and equipped by the Missouri Pacific Railroad, was recently operated for a month in Texas. The train consisted of two exhibit and two lecture cars and cars to accommodate the staff of twelve to fifteen physicians, sanitary engineers and technicians. The Texas health authorities, local physicians, and the U. S. Public Health Service and other Federal agencies furnished exhibit material and personnel to conduct lectures and demonstrations. One exhibit car displayed a model of a complete dairy farm and a miniature pasteurization plant in operation. The train traveled more than 2,500 miles during the month's tour, stopping at 115 towns and cities. It was visited by 70,000 people.

**The Inter-State Post-Graduate Medical Association of North America**

Meets in Atlanta, Ga., October 12-19, for the first time below the Mason-Dixon line. Dr. George W. Crile, Cleveland, chairman of the program committee, has been ably assisted in putting out a splendid program, on which there are something over a hundred national and international teachers of medicine and surgery. On Friday and Saturday, October the 12th and 13th, local physicians and surgeons of Atlanta will have two days of clinics at Wesley Memorial Church. Sunday, the 14th, will be given to rest, worship and sight-seeing. Promptly at 7 o'clock, Monday morning, the 15th, the Inter-State Assembly opens and continues throughout Friday night, the 19th of October. At noon on the 20th, the local doctors will give an old Southern barbecue and in the afternoon there will be a football game between Georgia Tech and Notre Dame at Tech Stadium in Atlanta.

Dr. Lewellys F. Barker, Baltimore, is president, and Dr. John B. Deaver, Philadelphia, president-elect of the Association. This is an intensive post-graduate course open to all doctors who are members in good standing in their county or State organizations, the only charge being a registration fee of five dollars.

For program or other information, write Dr. Marion T. Benson, 503 Medical Arts Building, Atlanta, Ga., general chairman of the Atlanta committees.

**Dr. Arthur D. Knott,**

Formerly in charge of the health unit on the Eastern Shore of Virginia, and for the past year of Richmond, Va., has moved to Parkersburg, West Virginia, where he is health commissioner for Wood County and the City of Parkersburg.

**Dr. Louis Holmes Ginn,**

Of the class of '27, Medical College of Virginia, after a year's internship at Letterman General Hospital, San Francisco, has been commissioned a first lieutenant in the medical corps of the U. S. Army.

**Nurses' Home Opened for Johnston-Willis Hospital.**

Early in August, the new Nurses' Home of the Johnston-Willis Hospital, Richmond, was opened for inspection, and the following day

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the nurses were established in their new quarters. This is a three story brick building, just to the rear of the hospital, with a capacity for housing approximately sixty nurses. In addition to nurses' quarters, there are classrooms for the training school, laboratories, rest and reception rooms.

**Philadelphia Fights Diphtheria.**

Display by the moving-picture theaters of a proclamation by the mayor of Philadelphia urging parents to have their children immunized against diphtheria was part of the campaign against this disease which was undertaken by the health agencies and other organizations of Philadelphia. The department of public health sponsored the campaign, and members of the staff did the inoculating, using seventy public and eight parochial schools as centers for the work. Public-utility and life-insurance companies aided in the work of distributing posters and circulars explaining the purpose of the drive.

**Studies of Vision in School Children.**

The United States Public Health Service has recently announced the results of studies conducted of vision of school children. Nearly 2,000 children were carefully examined by a physician specially trained in defects and diseases of the eye. These children were not a selected group and, therefore, the results may well be considered as representing conditions in the general school population of the country.

The number of children in the group studied who actually needed glasses for school work was 45 per cent of those examined. The Surgeon General emphasizes the importance of making visual tests of school children at least twice a year, because near-sightedness may progress rapidly within a year. The near-sighted eye may practically always be discovered by the use of the simple Snellen chart. Far-sightedness is not always discovered with this test.

These studies show that while 60 per cent of the children may read normally on the vision test chart, 32 per cent of these are definitely far-sighted and are constantly straining the eyes in near work. This was shown by using "drops" in the eye which temporarily removed the power of optical adjustment. The fact that the eyes of children should always be examined by a physician who is an eye specialist and is competent to make a thorough examination, is also pointed out. If a thorough examination had been made of the vision and proper steps taken for the correction of defects instead of waiting for symptoms to develop, it is probable that many persons who are wearing glasses today would not have to do so.

**Married.**

Dr. Adrian Lambeth Carson, Jr., Thorpe, W. Va., of the class of '25, Medical College of Virginia, and Miss Martha Warner, Franklin, W. Va., August 22.

Dr. Frank G. Scott, Jr., Orange, Va., and Mrs. Alice Shields Scott, Gordonsville, Va., August 22.

Dr. Francis Norman Bowles, Durham, N. C., of the class of '24, Medical College of Virginia, and Miss Rebekah Tresca, Palmetto, Fla., July 30.

Dr. John Russell Gill, of the class of '27, University of Virginia, Department of Medicine, and Miss Helen Dunbar Dew, Richmond, Va., early in August. They are at home at Jackson, La., where Dr. Gill is a member of the staff of the East Louisiana State Hospital.

Dr. William Carl Kappes, Huntington, W. Va., of the class of '24, Medical College of Virginia, and Miss Frances Kinney, Paris, Ky., in June.

**The Southern Medical Association**

Is to hold its twenty-second annual meeting in Asheville, N. C., November the 11th to 15th, inclusive. Dr. William R. Bathurst, Little Rock, Ark., is president, and Mr. C. P. Loranz, Birmingham, Ala., secretary-manager. Clinics, a good scientific program, golf, trap shooting and other pleasures will furnish a variety of entertainment for those attending. Asheville is ideally located for those going by rail and motor and a large attendance is expected. This Association has a membership of nearly nine thousand, representing sixteen Southern states and the District of Columbia. Membership in the S. M. A. is dependent upon membership in one's State organization. Now is a good time to join and attend the Asheville meeting.

**Dr. James S. Chalmers,**

Recently of Appalachia, Va., has located at Ada, Oklahoma.

**Dr. Susan A. Price,**

After substituting for Dr. Field as resident physician at State Teachers' College, Farmville, Va., has returned to her home in Williamsburg, Va. It is a matter of interest that Dr. Price's home in Williamsburg is one of those recently bought in the "Restoration of

Williamsburg" movement, but she has a life tenure in it.

**Causes of Illness at Different Ages.**

The interesting statement has recently been made by the U. S. Public Health Service that the age period in which human beings are most free from sickness of any kind is between twenty and twenty-five years. In infancy and early childhood they are most subject to illness, but in late childhood and adolescence the "curve of ill-health" drops rapidly to a minimum; thereafter it gradually rises until another maximum is reached in old age. Also the human female is more often sick than the male in spite of her longer average duration of life.

A city of about 8,000 was selected in which to make the survey and the causes of sickness at different ages were carefully recorded, the practicing physicians of the town co-operating to the fullest extent in making these records medically correct. One of the most striking results was that respiratory illnesses, particularly the so-called "common cold", accounted for over half of the illnesses at every age, but that each principal period of life is characterized by certain causes of illness. The only major causes which result in a higher rate of sickness in young adult ages than in any other age are puerperal conditions of females and certain specific causes of illness such as venereal diseases, typhoid fever, and pulmonary tuberculosis.

It was found that the higher female sickness rate did not hold true for children under ten years of age. Boy babies and small boys were apparently more subject to infectious diseases and to diseases of the eyes and ears, skin, to colds and other respiratory conditions, and to digestive troubles, than were girls of the same age. But, as soon as the adolescent period of life began, the sickness rate of girls became higher than that of the boys and the female rate for practically all diseases was actually higher than that of the males throughout adult life. One exception noted was that the frequency of accidents was greater among males than among females at every age of life.

**The Southwestern Virginia Medical Society**

Has arranged an excellent program for its meeting at Wytheville, September 27 and 28, under the presidency of Dr. J. L. Early, of Radford. Dr. E. G. Gill, Roanoke, is secretary. Dr. Robert H. Ivy, of Philadelphia, and Dr. William T. Graham, of Richmond will present papers as invited guests. These, with the symposium on Head Injuries and voluntary papers by members, should make an interesting program.

**Major Freeland Honored.**

Major Herbert L. Freeland, M. C., U. S. Army, who has been stationed at Richmond, Va., for several years, in charge of the organized reserves in this section, has been transferred to Fort Sam Houston, Texas. He left Richmond the first of this month for an extended auto trip with his family through the Middle West before reporting for duty at his new station early in October.

Several days before his departure from Richmond, a number of reserve officers in this section tendered Major Freeland a farewell dinner at the University Club, Richmond, in recognition of his service here.

**Dr. P. G. Hamlin**

Announces his removal from Williamsburg, Va., to 301 Medical Arts Building, Lynchburg, Va., where he is associated with Dr. Hunter B. Spencer in the practice of roentgenology.

**Dr. D. Lane Elder**

Has just been re-elected by the Hopewell City Council as mayor of that city for another term.

**Visit Richmond.**

Dr. and Mrs. Perry Wiseman and daughter, Alice Margaret, of Avondale, N. C., and Dr. and Mrs. Waylon Blue, of Jackson Springs, N. C., visited friends in Richmond the middle of August. Both Drs. Wiseman and Blue are members of the class of '25, Medical College of Virginia. Mrs. Wiseman was formerly Miss Grace Furrh and superintendent of Hygeia Hospital, this city.

**Dr. E. L. McGill,**

After a furlough of several months on account of his health, has resumed his duties as coroner of Petersburg, Va.

**The Elizabeth Buxton Hospital,**

Newport News, Va., has issued its Annual Report and Descriptive Booklet for 1927. This is profusely illustrated and gives an excellent description of the hospital which was founded in 1906. During the year, the total number of patients admitted to the hospital was 1,892, with 1,653 operations, and the work done was of a high class.

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**Dr. J. H. Mitchell**

Was recently elected one of the councilmen of Dillwyn, Va., his term of office commencing September 1.

**North Carolina's Drive to Increase School Attendance.**

A division of school attendance has been created in the State Board of Charities and Public Welfare of North Carolina to conduct intensive work to increase daily school attendance throughout the State. The work in each county will be under the county superintendent of public welfare and the truant officers, the school superintendents and rural supervisors acting in an advisory capacity. Local committees will be appointed to co-operate with the county officers in arousing the interest of the public and especially of the parents in school attendance, to help the teachers in getting at the true reasons for absences, and to bring about adjustments in the home when needed to permit the child's return to school.

**Officers in American Legion.**

Dr. Clyde F. Ross was elected first vice-commander of Richmond Post No. L, American Legion, at its annual meeting last month. Dr. J. Fulmer Bright was elected a member of the new executive committee.

**New Hospital Opened.**

The Northampton-Accomac Memorial Hospital at Nassawadox, Va., was opened on August the 11th and is the first hospital to be opened on the Eastern Shore of Virginia. It has been erected at a cost of about $150,000 and has accommodations for sixty patients. According to an agreement which has been made, for the next five years the new hospital will be under the management of the Johnston-Willis Hospital, Richmond, and Drs. Murat Willis and Frank Johns will visit the hospital from time to time. Dr. Donald Daniel, for the past two years resident surgeon for the Hospital Division of the Medical College of Virgina, Richmond, will occupy a similar position at the Nassawadox hospital, and will be assisted by Drs. William C. Henderson and John Hamilton, recently of Johnston Willis Hospital.

**McGuire Memorial in Winchester.**

On the first of August a bust of the late Dr. Hunter Holmes McGuire, of Richmond, given by his son Dr. Stuart McGuire, was placed in the gallery of art and history of the Handley High School, at Winchester, Va. The presentation took place in the house in which Dr. McGuire was born over ninety years ago and which is now owned and occupied by his nephew and namesake, Dr. H. H. McGuire, of Winchester. The bust is one of three made by the late Dr. John W. Brodnax, of Richmond, the others being in the Confederate Battle Abbey and St. Luke's Hospital, Richmond.

**Appointments in Petersburg.**

Dr. William A. Reese has been appointed city physician of Petersburg, Va., to succeed Dr. George H. Reese, who recently resigned to give his entire time to private work.

Dr. E. W. Young was also appointed a member of the staff at the Petersburg health center, succeeding Dr. William I. Prichard, resigned.

**Degree of "Master of Midwifery" for Physicians in Great Britain.**

Medical practitioners in Great Britain who have held for six months a resident appointment in a recognized obstetric hospital, have attended a recognized prenatal clinic and a recognized infant-welfare center for not less than three months each, and have passed examinations in obstetrics, infant welfare, and diseases of infancy are now offered a new diploma granting the degree of master of midwifery by the Society of Apothecaries of Great Britain.

**Dr. Lee S. Liggan,**

Recently located near Portsmouth, Va., has moved to 705 North Twenty-fourth Street, Richmond, Va.

**Dr. Fitzhugh L. Banks,**

Who has made his home for sometime at Maben, W. Va., is now connected with the Hinton Hospital, at Hinton, W. Va.

**President of Johns Hopkins Medical Society.**

Dr. William H. Wilmer, of Baltimore, has been elected president of the Johns Hopkins Medical Society for the coming year.

**Far Reaching Work.**

Dr. William F. Drewry, a former president of the Medical Society of Virginia, has now been city manager of Petersburg, Va., for five years. In a report recently given the city council of that place, outlining the work which has been accomplished with the help of the city officials, during his administration, Dr. Drewry also made a number of recommendations to answer future needs of that city, which when accomplished, should make it one of the most up-to-date of Virginia's cities. Dr. Drewry is to be congratulated on the work he is doing.

**Dr. George C. Snead,**

Who has been practicing for sometime at Wilder, Va., has now located at Clinchco, Va.

**"Graduate Fortnight".**

A great deal of interest has been aroused in the "Graduate Fortnight" of the New York Academy of Medicine, on the problem of aging and of old age, which is scheduled for October the 1st to 14th, with two sessions daily at the Academy, and clinical demonstrations and lectures at thirty teaching hospitals. All meetings and lectures held at the Academy are open to the profession generally and to medical students.

For information, write the Executive Secretary of the Bureau of Clinical Information, New York Academy of Medicine, Fifth Avenue and One Hundred and Third Street, New York City.

**Dr. A. C. Van Reenen,**

Of the class of '24, Medical College of Virginia, announces his removal to Davy, West Virginia, where he will be engaged in practice.

**Mental Hygiene Leaflets.**

The National Committee for Mental Hygiene, 370 Seventh Avenue, New York, N. Y., has issued several pamphlets reprinted from "Mental Hygiene" and the "Mental Hygiene Bulletin", a complete list of the publications of the National Committee for Mental Hygiene, and "Suggestions for Reading in Mental Hygiene". This material should be of value to the general practitioner who is frequently puzzled by the mental attitudes and behavior difficulties of his patients.

**Dr. James McLean Rogers,**

Who has for several years been in charge of the Alexander Hospital at Soonchun, Korea, will leave there early in October for an eight months' furlough in this country. He will be with his father at his home at Amelia Courthouse, Virginia.

**Civil Service Examinations.**

The following open competitive examinations have been announced by the U. S. Civil Service Commission, Washington, D. C., which will give full information about same:

For associate statistician (public health) and assistant statistician (public health), applications to be on file with the Commission not later than October 19;

For social worker (psychiatric) and junior social worker (psychiatric), applications to be on file with the Commission not later than December 29, 1928.

**Drs. Blanton Move.**

Drs. C. A., H. W. and W. B. Blanton, Richmond, announce removal of their offices from 300 West Grace Street to 828 West Franklin Street, this city.

**"Sunlight Beneficial to Health but Extensive Sunburn Should be Avoided",**

A statement made in a recent bulletin issued by the U. S. Public Health Service, is one familiar to all physicians. However, all laymen are not familiar with this fact and, in prescribing "sun baths" for patients, young or old, this bulletin suggests that the following facts be kept in mind:

Exposure to the sun must be gradual or else the person unaccustomed to the sun may receive a sunburn.

At first give the direct sunlight for about ten minutes, increasing the exposure by three to five minutes daily to one hour in the morning and one hour in the afternoon.

The exposure should be in some spot sheltered from the wind. Sun baths may be given on enclosed porches or in the house, provided the sun is unobstructed by glass, though special glass has been devised which will permit passage of the majority of the beneficial rays of the sun. Such glass may be used if desired.

Prolonged or sudden exposure to sunlight should be avoided, as injurious or even dangerous sunburn may result if the sunburn is extensive. In case of sunburn, the following has been found useful:

Make a lotion as follows: Take one-half a pint of hot water and stir into it a level tablespoonful of boric-acid powder; then add twenty drops of carbolic acid, and shake well. The solution should be dabbed on the inflamed skin with a small piece of cotton or sprayed on with an atomizer. It should not be rubbed into the skin. It can be applied every half hour, if necessary. If no medicine is available, cold compresses will give relief to badly burned areas.

**Dr. Oliver Lee Jones,**

Of the class of '27, Medical College of Virginia, who recently completed an internship at Lewis Gale Hospital, Roanoke, Va., has located in Hopewell, Va., for the practice of his profession.

**Dr. W. J. Innes,**

Who since August, 1918, has been located at St. Charles, Va., is now at Pennington Gap,

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Va., where he is engaged in the practice of his profession.

**Dr. Joseph M. Burke,**

Chief surgeon of the Seaboard Air Line Railway, Norfolk, is under treatment at Johns Hopkins Hospital, Baltimore.

**Dr. James C. Repass,**

For some time located at Cedar Bluff, Va., has moved to Raven, Va.

**Doctor Wanted.**

To take over established practice in small town and thriving rural community. Excellent roads, high school and churches. Cash collections $5,000 to $8,000 annually. Wonderful opportunity. Reason for selling—want to move to city to specialize. Address "Doctor", care VIRGINIA MEDICAL MONTHLY. (Adv.)

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# Obituary Record

**Dr. William David Woolwine,**

Pearisburg, Va., died suddenly July the 27th, death being due to angina pectoris. Dr. Woolwine was born in Pearisburg, fifty-two years ago, and studied medicine at the University College of Medicine, Richmond, Va., from which he graduated in 1897. He had been a member of the Medical Society of Virginia since 1900. His health had not been good for the past ten years and he had recently spent sometime at Catawba Sanatorium. Besides his uncle Mr. J. H. Woodrum, in whose family he made his home, he is survived by one sister and three brothers, one of them being Dr. A. B. Woolwine, of Ceres, Va.

**Dr. Alexander Russell Gray,**

Nokesville, Va., died August the 30th, aged fifty-nine years. The interment was at Palmyra, Va., where he had practiced for a number of years. Dr. Gray was graduated in medicine at the Medical College of Virginia in 1905 and had been a member of the Medical Society of Virginia for some years. His wife and several children survive him.

**Resolutions on Death of Dr. Beckwith.**

A called Faculty Meeting of the Petersburg Medical Faculty and the Staff of the Petersburg Hospital was held at the Health Center July 28, 1928, to take action on the death of our beloved colleague, Julian Ruffin Beckwith. The following preamble and resolutions were adopted:

WHEREAS, In the death of Julian Ruffin Beckwith, the Medical Faculty of Petersburg and the Staff of the Petersburg Hospital have lost one of our most valued and beloved physicians, whose life was given unfailingly and untiringly to the practice of his profession.

THEREFORE BE IT RESOLVED, That we extend to his family our sincere and heartfelt sympathy; and furthermore

BE IT RESOLVED, That a page in the minutes of each organization be dedicated to his memory;

That a copy of these resolutions be published in the *Progress-Index* and in the *Virginia Medical Monthly;*

That a copy be sent to his bereaved family, and

That the members of these organizations attend the funeral in a body.

Signed:

MASON ROMAINE, M. D., *Chr.*,
W. F. DREWRY, M. D.
W. A. REESE, M. D.

**Dr. G. Shirley Carter,**

Warrenton, Va., died at the Emergency Hospital, Washington, D. C., August 13th, after an illness of several months. He was seventy-four years of age and was graduated in medicine from the University of Maryland, Baltimore, in 1882 and had practiced in Warrenton since 1885. He is survived by his wife and two children.

**Dr. Charles A. L. Reed,**

Cincinnati, Ohio, emeritus professor of gynecology at the University of Cincinnati, College of Medicine, died at his summer home at Gloucester, Mass., August 29th, at the age of seventy-two years. He was a well known surgeon and author.

**Dr. William Early Coltrane,**

Dunn, N. C., member of the class of 1912, Medical College of Virginia, Richmond, died June the 2nd of carcinoma, aged forty years. He was a member of the Medical Society of the State of North Carolina.

**Dr. William J. Summers,**

Boonton, N. J., who graduated in medicine from the former University College of Medicine, Richmond, Va., in 1908, died July the 7th, of chronic nephritis. He was forty-three years of age, and a member of the Medical Society of New Jersey.

**Mrs. Fred M. Hodges,**

Wife of Dr. Fred M. Hodges of Richmond, Va., died August 28th after an illness extending over several months. Besides her husband, she is survived by her mother, Mrs. Annie Mueller, formerly of Oregon.

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